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THE PREPARATION OF CASTOR OIL.

By ERNEST P. RAAB, Ph. G.

From an Inaugural Essay.

Castor oil is obtained in the United States by the following method, as witnessed at the "Belleville Oil Works," owned by Messrs. Brosius & Son. The seeds having been thoroughly cleansed from the dust and particles of the pod, with which they are more or less contaminated, are placed in an iron reservoir and slightly heated. Great care is taken to prevent them from being scorched, the object being only to make the oil more fluid for expression. The pressing is now proceeded with by means of hydraulic presses, which are preferred on account of the great force exerted by them. Each piece has a series of movable plates and cylinders, of which each cylinder is filled, the plate pushed in, and then the power applied. The first quality oil is thus expressed, and runs into a large tank below. The pressed seeds are now heaped into a pile and allowed to remain for a day. Next day they are again heated in another iron reservoir, put into a series of cylinders, power is applied, and the second quality, or lubricating oil, is obtained. Messrs. Brosius & Son use a portion of their oil-cake for fuel, and send the remainder to the East, where it is utilized in combination with other matter to produce artificial guano. A Philadelphia firm, Messrs. Baeder, Adamson & Co., have resorted to bisulphide of carbon as a solvent from the press-cake, thereby obtaining a dark thick liquid. The process is similar to that carried on in France with alcohol, the product, however, being a very common lubricating oil, but without smell of bisulphide of carbon. The firm does now not manufacture any more.

The oil made by the process in use at the "Belleville Oil Works" is called cold pressed, to distinguish it from any of the other methods in which more heat is employed. The cold-pressed oil without doubt deserves the preference, and is now extensively used. The yield per

bushel after two expressions is sixteen pounds, or two gallons; the first expression yielding twelve pounds, the second four pounds. Sometimes a third expression is resorted to, but this oil is much colored and the yield so very small that it hardly pays for the labor and expense incurred; the yield is from one to three pounds.

The process of purifying and clarifying the oil is accomplished in various ways, and is the specialty of every factory. The great point in purification as well as clarification to be noticed is the fact not to expose the oil too long to the air, as it is then liable to become rancid. The first expressed oil is clear white, or rather colorless, like water; the color of the second expression is yellowish, like syrup of squills. Castor oil is remarkable for its power of mixing, in all proportions, with glacial acetic acid and with absolute alcohol without the aid of any other agent. It is soluble in four parts of alcohol, ·835 or ·850, at 15°C., and mixes without turbidity with an equal weight of the same solvent at 25°C. Its specific gravity is ·97 to ·98; it congeals at —12° to —13°C, and becomes solid at —40°C.

The oil of the first expression is used for medicinal purposes; that of the second for oiling leather, lubricating machinery, burning and various other purposes.

The oil-cake is either, by the addition of animal matter and other ingredients, made into manure, artificial guano, or is used for fuel. The latter is the customary practice in large oil mills, where a saving of from $40 to $50 a week is effected thereby.

THE VALUE OF ALTHÆA AS A PILL EXCIPIENT.

By W. Wallace Beitenman, Ph.G.

From an Inaugural Essay presented to the Philadelphia College of Pharmacy.

The use of althæa as an excipient was suggested from the fact that it contains a large amount of mucilage, and, in endeavoring to determine its value as such, I found it to answer admirably in every respect but one, which I shall shortly state.

The proportion of mucilage contained in good althæa is from 25 to 35 per cent. This it readily yields to boiling water, together with about the same amount of starch, some pectin, sugar, etc., which are also present. Treated with cold water, the mucilage, without the starch, is extracted, the infusion becoming ropy.

In experimenting with the althæa, it was used, however, only in the form of a fine powder. With some few substances, by using simply the powder with a little water or simple syrup, a pilular mass was readily obtained; but with most substances the amount of powder required was such as to render the pills too large. To remedy this, combination with other substances was resorted to. Tragacanth, acacia, syrup, solution and syrup of acacia, glycerin, etc., were tried, using them in different proportions and with various results. The best combination was produced by mixing six parts of althæa with one part of powdered tragacanth, and simple syrup sufficient to give the required consistence. By using a smaller proportion of tragacanth the adhesiveness was decreased; while on the addition of a larger proportion it was not materially changed. The use of either solution or syrup of acacia instead of simple syrup did not improve the mixture; while with glycerin the adhesiveness was much lessened. But by mixing about three parts of tragacanth with six of althæa, and then with glycerin, a mixture was obtained nearly as good as the first. In this the adhesiveness, without doubt, was due more to the tragacanth than to the althæa. Acacia used instead of tragacanth, either in the same or in larger proportions, was found far inferior to the latter. In short, in no way could I improve on the combination first mentioned. Giving that in definite quantities, we have the following formula:

℞ Powd. Althæa, ... ℥i
" Tragacanth, ... grs. x
Simple syrup, ... f℥ii
Mix well.

This is easily and quickly prepared, is ropy, plastic, and of such adhesiveness that with heavy, inert substances, such as reduced and dried sulphate of iron, a small quantity will give a mass capable of being easily and thinly rolled out.

With quinia and other cinchona alkaloids it answers well, forming with them, either with or without the use of acid, masses of good consistence and plasticity; and, as but a small amount of excipient is required, the white color of the alkaloids, which for elegance the pills ought also to have, is not perceptibly changed. In speaking of the color, I may here state that in mixing the ingredients of the excipients it becomes of a pale somewhat dirty yellow color. In comparing it with several excipients that have met with considerable favor, it was

found that for adhesiveness and plasticity it was fully equal if not superior to the best.

Thus, then, for reasons already mentioned, and for its general adaptability, it would undoubtedly prove a valuable addition to the prescription counter were it not for one great objection, viz., that pills prepared with it soon become hard and insoluble.[1] This seems due mostly to the althæa itself; for with pills prepared with an excipient in which other substances were substituted for the tragacanth and syrup, and especially where althæa and water were used to make a mass, the effect was just about the same. Failing to remedy this tendency to harden, its value practically is naught.

In France, althæa is said to be much employed in the preparation of pills and electuaries. On inquiring as to the manner in which it is there used, I was informed that in the preparation of pills it is never used as an excipient or ingredient, but simply to dust or place among them for the same purposes that we use lycopodium, powered liquorice and rice flour, and when used in the preparation of electuaries, etc., only to give them bulk and consistence.

Here some prefer althæa to powdered liquorice in the preparation of blue pill. In this I fail to see the advantage, as it produces no change other than making the mass somewhat harder in consistence. In conclusion, to show the adhesiveness of the mixture of althæa, tragacanth and syrup I subjoin a list of some substances made into pills, stating opposite each the amount of excipient required to form a mass:

Pyrophosphate of iron,	45 grs.	Excip., 5 grs.	No. of pills, 15
Dried sulphate "	30	3	15
Quevenne's iron,	30	4	15
Sulphate of quinia,	20	2	20
" cinchonidia,	20	2	10
Calomel,	50	3	10
Subnitrate of bismuth,	50	3	10
Capsicum,	45	5	15
Powd. digitalis,	15	3	15
" asafœtida,	30	2	10

[1] Pills made with powdered marshmallow root soon become dry and hard in consequence of the absorbent power of this powder for liquids; but we do not believe that they become insoluble, because marshmallow is capable of absorbing a large amount of liquid, and pills made with it are readily disintegrated.—EDITOR AMER. JOUR. PHARM.

COMPARATIVE STRENGTH OF THE OFFICINAL WINES AND TINCTURES.

By George Morris Eckels, Ph.G.

From an Inaugural Essay.

I undertook this subject at the suggestion of Dr. F. Marion Murray. The intention was to find the amount of soluble matter extracted from the drugs by the menstruum of the various wines and tinctures, officinal in the U. S. Pharmacopœia. In making these preparations I followed strictly the officinal formulæ, except in those where an additional substance is used in connection with the base of the preparation; as for example, in the tincture of aloes, where licorice is used in addition to the powdered aloes. As only the amount of aloes taken up by the menstruum was sought, no licorice was used in the preparation. So in all other preparations, everything was omitted except the drug which is the base of the preparation.

To make a better comparison of the strength of a corresponding wine and tincture, they were made from the same amount of drug to a like measure, which in all experiments was 118·12 cc. (4 fluidounces). The sherry wine was of 20 per cent. alcoholic strength.

In all preparations requiring the drug to be percolated, a grooved cork was placed loosely in the neck of the funnel and wrapped with patent lint. After having packed the moistened drug, the exposed surface was covered with a disc of filtering paper.

In those preparations made by maceration, well stopped bottles were used and the mixture frequently agitated during the time required for the operation.

All evaporations were made by means of a water-bath, the temperature being kept at or below 120°F., so that none of the volatile principles possessed by any drug might be driven off. The top of the water-bath was covered so that no dust or foreign matter could get in to interfere with the accuracy of obtaining a pure extract, and the bulb of a thermometer was kept immersed in the water in order to ascertain the temperature at any time.

In weighing the extracts, the evaporating dish, after removal from the water-bath, was perfectly dried and weighed with the extract. After securing the extract, the evaporating dish was well washed, dried and weighed; on deducting its weight from the combined weight of evaporat-

ing dish and extract the difference would necessarily give the true weight of the extract.

The extract was always evaporated sufficiently so there would be no trouble in reducing it to a fine powder.

After repeated attempts and failures to evaporate the wines so that the extracts could be powdered, it was determined to ascertain the amount of soluble matter contained in the wine by thoroughly drying the undissolved powder and deducting this weight from the weight of the drug used.

The results of the author are given in the following table:

Name of Preparation	Menstruum used.	WEIGHT OF Drug.	Residue.	Dissolved matter.	29·53 cc. (f℥i) of the preparation yield
Tinctura Aloes	Al. 1, water 3	7·77 grm.	1·03 grm.	[1] 6·74 grm.	1·68 grm.
" " U.S.P.	. . . . .	. . .	. . .	. . .	·84 "
Vinum Aloes,	Sherry wine	7·77 "	·90 "	6·87 "	1·71 "
Tinct. Colchici rad.	Dil. Alc.	46 65 "	40·89 "	5·76 "	1·44 "
Vin. Colchici rad.	Sherry wine	46·65 "	39·45 "	7·20 "	1·80 "
Tinct Colchici sem.	Dil. Alc.	15·54 "	13·80 "	1·74 "	·43 "
Vinum " "	Sherry wine	15·54 "	14·25 "	1·29 "	·32 "
Tinct. Ergotæ	Dil. Alc.	15·54 "	13·21 "	2·33 "	·58 "
Vinum Ergotæ	Sherry wine	15·54 "	14·05 "	1·49 "	·37 "
Vin. Ipecacuanhæ	Sherry wine	7·77 "	6·99 "	·78 "	·19 "
Tinct. Ipecacuanhæ	Dil. Alc.	7·77 "	6·15 "	1·62 "	·40 "
Vinum Opii	Sherry wine	15·54 "	8·03 "	7·51 "	1·88 "
Tinct. Opii	Dil. Alc.	15·54 "	7·51 "	[1] 8·03 "	2·00 "
" " U.S.P.	. . . . .	. . .	. . .	. . .	1·25 "
Vinum Rhei	Sherry wine and Dil. Alc.	15·54 "	7·77 "	7·77 "	1·94 "
Tinct. Rhei	Dil. Alc.	15·54 "	9·39 "	[1] 6·15 "	1·53 "
" " U.S.P.	. . . . .	. . .	. . .	. . .	1·15 "
Vinum Tabaci	Sherry wine	7·77 "	6·21 "	1·56 "	·39 "
Tinct. Tabaci	Dil. Alc.	7·77 "	6·41 "	[1] 1·36 "	·34 "

[1] The mark [1] indicates that the weight of the extract was also ascertained by direct evaporation of the tincture.

REMARKS.—The title of this essay is not quite correct, since the medicinal *strength* of tinctures and wines depends solely upon the amount of active principles dissolved, and is not in proportion to the total weight of principles dissolved by different menstrua.—EDITOR AMER. JOUR. PHAR.

GLEANINGS FROM THE GERMAN JOURNALS.

By Louis von Cotzhausen, Ph.G.

Goulard's Cerate.—C. Bernbeck thinks that the cerate of subacetate of lead ought either to be discarded altogether as a healing salve or at least be made extempore, because he frequently found it to contain free acetic acid when a few days old, which of course makes the cerate irritating instead of healing. The presence of acetic acid can be readily determined by the odor, and by triturating 5 grams of the cerate in a mortar with an equal quantity of alcohol, and testing with blue litmus paper, previously moistened with water.—*Pharm. Ztg.*, July 30, 1879, p. 465.

Determination of Adulterations in Balsam of Peru. — Hager suggests the following three tests:

1. *The Petroleum-Benzin Test.*—Shake in a test-tube 2·5 grams of the balsam with 6 to 7 cc. of petroleum-benzin, when a thick brown liquid will adhere to the sides of the tube for 1 or 2 minutes after decanting the benzin, in case the balsam is pure. If adulterated, the mass is thin, does not adhere, but collects immediately below the benzin. The latter is clear, almost colorless or slightly yellowish if the balsam is pure, but turbid, yellowish-brown or brown if adulterated.

2. *The Specific Gravity Test.*—If the specific gravity is above 1·136 the balsam is either pure or only adulterated with benzoin; if below, it contains other adulterations.

3. *The Alcohol and Water Test.*—Dissolve 1 part of the balsam in 7 parts of alcohol (with pure balsam a dark brown solution is obtained), and shake this solution with 4 or 5 times its volume of water. In case the balsam is pure the resulting mixture will remain milky for several days, even if heated.—*Pharm. Centralbl.*, July 31, 1879, p. 297.

Effect of Tannic Acid on Iodide of Starch.—E. Heintz observed that the blue color reaction between iodine and starch is entirely prevented by the presence of tannic acid. 5 grams of filtered 1 per cent. wheat starch solution yield a permanent blue color with 1 drop of of tincture of iodine; and this mixture is gradually decolorized by adding 5 drops, and very quickly by adding 10 drops of a solution of 1 part tannic acid in 5 parts water.—*Pharm. Ztg.*, Aug. 6, 1879, p. 481.

Effect of Ergot on Musk (see "Amer. Journ. Pharm.," Jan, 1879, p. 25).—Dr. Ad. Bertrand triturated ½ grain unadulterated musk with

5, 10, 20, 30 and 60 grains of ergot, without injuring the odor of the musk; a strong odor resembling ammonia was at first noticed, which soon disappeared, while the odor of the musk became still stronger after the oil of the ergot was absorbed by paper. Dr. Eginhard Bertrand intends to continue the researches of his father.—*Ibid.*, July 30, 1879, p. 465.

Poison Antidotes.—Jandousch's general antidote for *metallic salts* consists of a mixture of iron sulphate and magnesium hydrate. As a certain preventative of *phosphorus poisoning*, if administered immediately, he recommends an emetic consisting of 0·8 gram cupric sulphate, and as a reliable antidote for *carbolic acid*, a mixture of 1 part calcium hydrate and 3 parts of sugar.

Hager considers freshly precipitated sesquioxide of iron an equally efficacious antidote for *phosphorus*, and also suggests the immediate administration of an emetic consisting of 1·0 gram cupric sulphate, followed by 0·5 gram of the same emetic every five minutes until the patient vomits, in case of poisoning with *hydrocyanic acid* or *potassium cyanide*.

The strychnia antidotes are very numerous; tannic acid, chloroform and chloral hydrate, in connection with emetics, however, appear to be most reliable.—*Pharm. Centralh.*, July 17, 1879, p. 284.

A red solution of chlorinated soda was obtained by L. Schilbach by using English sodium bicarbonate in the place of sodium carbonate in the preparation of the solution. The raspberry-red coloration appeared after standing for some time, and greatly resembled the color produced by the action of chlorinated lime on anilin solution, which induces the author to suppose that carbonic acid, generated from bituminous coal and calcium carbonate, is used for saturating the sodium, which accounts for the presence in it of pyrogenous products resembling anilin.—*Pharm. Ztg.*, July 30, 1879, p. 465.

Luting for Stills.—A. Thanisch uses narrow strips of ordinary packing- or writing-paper, coated on one side with fresh starch paste, to which one-eighth of glycerin is added, and claims that such strips do not crack off, but adhere readily to the hot metal and can easily be removed when the distillation is completed by running a knife along the connection, taking the apparatus apart, and soaking off the paper in water.—*Ibid.*, Aug. 9, 1879, p. 489.

Improvement in Stills for Alcoholic Liquids.—W. Sennecke

uses an ordinary still, supplied with a strong vertical stirring apparatus. Alcoholic liquids may thus be distilled in one-third the usual time, and at one-third the usual expense.—*Ibid.*

Commercial Extract of Juniper-berries having a salty, disagreeable taste, and producing nausea and vomiting, was analyzed by L. Schilbach, who was unable to determine the presence of any metallic impurities in it, and therefore supposes the symptoms due to organic adulterations (probably the leaves and unripe berries of Coniferæ).—*Ibid.*, Aug. 6, 1879, p. 482.

A New Hæmostatic, prepared by Carlo Pavesi, achieved quite a reputation, and consists of sulpho-carbolic acid 25 parts, alcohol 25 parts, benzoic acid 5 parts, tannic acid 5 parts, glycerin 25 parts, and rose water 200 parts. The sulpho-carbolic acid is prepared by mixing 1 part sulphuric acid and ½ part carbolic acid, and heating for a few minutes on a water-bath; the benzoic acid is dissolved in the alcohol and glycerin, and the tannic acid in the water. The mixture is clear, straw-colored, has an acid taste, is neither caustic nor irritating, and coagulates albumen, milk and blood.—*Ibid.*, Aug 9, 1879, p. 489.

Hectograph Ink.—The anilin copying-ink, used for hectographs and similar copying apparatus, is made by E. Stoerner by heating together in a flask 5 parts anilin-pigment, 5 parts alcohol, 5 parts gum arabic mucilage, and 35 parts water until a solution is effected, which is then strained through cotton.—*Ibid.*, Aug. 6, 1879, p. 482.

Extempore Preparation of Various Quinia Salts.—*Quinia Carbolate:* Pure quinia gr. x, carbolic acid gr. v.

Quinia Citrate: Pure quinia gr. xv, citric acid gr. viii; this product is equivalent to 20 gr. citrate of quinia.

Quinia Hydriodate: Quinia sulphate gr. c, potassium bromide gr. xxviii; this product is equivalent to 100 gr. quinia bromide.

Quinia Hydrobromate: Quinia sulphate gr. xcv, potassium iodide gr. xxxx; this product corresponds to 100 gr. quinia iodide.

Quinia Hydriodate-iodide: Quinia muriate gr. lxx, potassium iodide gr. l, iodine gr. xx; these constituents are triturated together with a little alcohol. The product corresponds to 100 gr. quinia hydriodate-iodide.

Quinia Hypophosphite: Quinia muriate gr. c, lime hypophosphite gr. xxiv; the product corresponds to 100 gr. quinia hypophosphite.

Quinia Lactate: Pure quinia gr. lxx, lactic acid gr. xxxv; if necessary these are triturated together with a little alcohol; the product corresponds to 100 gr. quinia lactate.

Quinia Phosphate: Quinia sulphate gr. xciv, sodium phosphate gr. lxxx; the product corresponds to 100 gr. quinia phosphate.—*Zeitschr. Allg. Oest. Apoth. Ver.*, 1879, p. 354, from *Journ. de Pharm. et de Chim.*, May, 1879, p. 453.

CHEMICAL NOTES.

By Prof. Samuel P. Sadtler.

Inorganic Chemistry.—Lecoq de Boisbaudran, the discoverer of gallium, announces the discovery of a *new element*, *Samarium*, in the American samarskite. As yet he has not isolated either the metal or its oxide, because of the extreme difficulty of separating it from the accompanying elements decipium and didymium. He, however, maps the spectrum of nitrate of samarium and compares it with that of nitrate of decipium, as given by its discoverer De la Fontaine, and shows that samarium has four strong bands in its spectrum, of which two are in the blue and two in the violet. One of the blue and one of the violet bands nearly correspond to, and indeed overlap, two of the bands characteristic of decipium. As numerous investigators have the earths from samarskite under examination, we shall doubtless hear shortly of farther results.—*Comptes Rendus*, No. 89, p. 212.

On the recently-discovered element Scandium.—Prof. Clève announces that this element is found not only in the ytterbine, but in the gadolinite and yttrotitanite of Norway. It forms but the one oxide, Sc_2O_3. The composition of the double sulphate with ammonia and the double oxalate with potassium both prove this. The atomic weight of the metal scandium, as determined from the repeatedly purified oxide, is 45·12. Its oxide, Sc_2O_3, is a powder, perfectly white, light and infusible, resembling magnesia. Acids, even the strongest, attack it with difficulty, although it is more soluble than alumina. The hydrate of scandium is a white, voluminous precipitate, resembling hydrated alumina. This hydrate is insoluble in an excess of ammonia and in caustic potassa. The salts of scandium are colorless or white. They possess an astringent and very bitter taste, very different from the sweet

taste of the other yttria earths. The sulphate does not form distinct crystals, but the nitrate, oxalate, acetate and formiate are crystallizable. What most of all renders the discovery of scandium interesting, however, is that its existence was announced in advance. In the publication of his law of the periodicity of the elements, the Russian chemist Mendeljeff predicted that a metal possessing an atomic weight of 44 would be found. He called this hypothetical element *Eka-boron*. The characters he ascribed to it agree very well throughout with those found by Clève as belonging to scandium, and enumerated above. The coincidence here is if anything more striking than in the case of gallium, which answers to another of Mendeljeff's predicted elements.—*Ibid.*, p. 419.

The statements as to the *point of solidifying of Bromine* have varied greatly. Balard had stated that it was fluid at —18°C., Liebig that it solidified at —25°C., and, on the other hand, Regnault and others fixed it at —7·3° to —7·5°C. Jul. Philipp has, therefore, examined this question. He found that purified bromine invariably solidified at —7·2° or —7·3°C. The bromine before purifying solidified at —9° to —10°C. He then added iodine and chlorine to different samples, with the design of determining what influence their presence would have upon the solidifying point of the bromine. Two per cent. of iodine did not materially change it, raising it slightly; 3 or 4 per cent. of chlorine, however, changed it, so that it was not solid at —15°C. Solid bromine has a brown color, conchoidal fracture, but on exposure to the moisture of the air takes a grayish tint, recalling iodine.—*Ber. der Chem. Ges.*, xii, p. 1424.

Organic Chemistry.—The study of the decomposition products of the vegetable coloring materials is being steadily pursued by German chemists, and is throwing much light upon their composition and chemical relationships. Thus the decompositions of both hematoxylin, the coloring matter of logwood, and brazilin, the coloring matter of Brazil wood, show that they belong to the class of phenol colors, although their exact constitution is as yet an open question. Richard Meyer has just studied *the behavior of hematoxylin on dry distillation*, with a view of contributing to a solution of this problem. E. Kopp had found that brazilin, when submitted to dry distillation, yielded resorcin, and was probably a resorcin-succinin. Hematoxylin, however, when

fused with caustic potash yields pyrogallic acid. It therefore must be a derivative of this phenol. Its formula $C_{16}H_{14}O_6$, however, corresponds to a mixed resorcin and pyrogallol-succinin rather than to a simple pyrogallol-succinin, which would be $C_{16}H_{14}O_7$. Meyer found that the dry distillation yielded both resorcin and pyrogallic acid, the former recognized by yielding fluorescein in the phtalein reaction (see this journal, page 276, May, 1879), and the latter gallein in the same reaction.—*Ibid.*, p. 1392.

A Russian chemist, Wischnegradsky, has been studying *the derivatives of Cinchonia*, and discusses its relations to the coal-tar bases chinolin and pyridin. By treatment with alkali, cinchonia was decomposed into chinolin and a solid compound, which could be itself decomposed into a volatile base and acids of the fatty series. This volatile base just spoken of is a colorless liquid, difficultly soluble in water, boiling at 106°C., and possessing a composition C_7H_9N. On oxydation it yielded carbonic and formic acids, together with a nitrogenous compound identical with mono-carbopyridenic acid, $C_6H_5O_2N$, and the base can, therefore, be considered as ethyl-pyridin. He considers cinchonia, therefore, to contain both the chinolin and the pyridin molecules, or rather nuclei, united by an acid radical. Thus the empirical formula of cinchonia, $C_{20}H_{24}N_2O$, would allow it to contain the chinolin and the pyridin groups united by the acid radical CH_2—CH—CO or HC_2—CH_2CO. He points out finally that a synthesis of cinchonia can possibly be made by bringing together dihydrolepidin (methyl-chinolin), dihydroethyl-pyridin, and the chloranhydride of chloropropionic acid—*Russian Correspond. in Ber. der Chem. Ges.*, xii, p. 1480.

Synthesis of Helicin and Salicin.—The synthesis of a glucoside or glucose-yielding vegetable substance is an important event in itself, as this had never been accomplished, but in this case it seems doubly important as the method seems to be one capable of general application and may lead to much greater results. A. Michael has just effected this synthesis in Wurtz's laboratory. Taking the so-called aceto-chlorhydrose, the product of the action of acetylchloride upon glucose, and acting with it upon potassium carbolate and potassium salicylite successively, two compounds were obtained, both of which showed the characters of glucosides. The first of these new substances does not appear to have been found as yet in nature. Michael calls it *pheno-*

glucoside. The second not only possesses the composition of helicin, an oxydation product of salicin, but examination shows it to be absolutely identical with the naturally derived product. The helicin, acted upon with nascent hydrogen, yields salicin, the glucoside of the willow. The author proposes to extend this method to the study of a number of the more important glucosides, mentioning among others suberythric acid, the glucoside of the madder root.—*Comptes Rendus*, No. 89, p. 355.

Test for Alcohol.—Jaquemart proposes to test a liquid for alcohol by means of a solution of mercuric nitrate. This reagent acts at once upon alcohol, and while different products are formed a partial reduction to mercurous salt takes place. If, after the action is complete ammonia is added, a black precipitate is formed which is more copious and deeper in color, as more alcohol is present. Methyl alcohol, under like circumstances, effects no reduction of the mercuric salt; 5 to 6 cc. of the solution to be tested, decolorized by animal charcoal if necessary, will suffice for the reaction.—*Fres. Zeits. für Anal. Chem.*, No. 18, p. 291.

On the preparation of crystallized Albumenoid Compounds.—E. Drechsel has taken a method suggested by Schmiedeberg for extracting the vitellin from Para nuts in a crystalline state, and has improved and extended it, so that it is now a general method for obtaining albumenoid compounds in a crystallized state. The aqueous solution of the impure vitellin is precipitated by carbonic acid gas, the well-washed precipitate digested at 35°C. with magnesia and water; the filtered solution is then placed in a dialyser and this placed in absolute alcohol. The water diffuses very rapidly into the alcohol, and small crystalline grains separate out of the solution. These are perfectly granular and easily washed. They are thrown upon a filter (best a sand-filter in a wide tube), washed first with 5 per cent. alcohol, then with absolute alcohol, and finally with pure ether. They are then dried in a stream of dry air at ordinary temperatures. These crystals are the magnesia compound of vitellin. Drechsel proposes to apply this method of alcohol dialysis to the extraction and determination of the urea in the blood as well as to the preparation of crystallized albumenoids.—*Jour. für pr. Ch.*, 1879, p. 19, 331.

CINCHONA CALISAYA LEDGERIANA.

By K. W. van Gorkom.

Translated and abridged from "Pharm. Ztg.," Aug. 6, 1879, p. 480, by Louis von Cotzhausen, Ph.G.

C. Ledger, an Englishman, made a contract with the Australian Government to supply the latter with South American Alpacas, and for this purpose remained in South America from 1841 to 1858, when he returned to Australia, where the acclimatization of the Alpacas had but little success. Having returned to Peru in 1865, he was supplied by his former servant Manuel, who at one time had been a Cascarillero, and therefore was well acquainted with the cinchona regions, with a package of cinchona-tree seeds which had been collected in the province Caupolican. This package was sent by Ledger in the month of July, 1865, by way of Arica, to his brother in England, with the instruction to endeavor to sell it to the English Government. Being unsuccessful in this, his brother placed a portion of the seeds at the disposition of the Netherland Government and sold the remaining portion to Mr. Money; the former were successfully planted in Java in 1865, and the latter in the British-India plantations with but little success.

The young plants in the Java plantations numbered 20,000, and were kept separate, although Ledger had stated that the seeds were obtained from Cinchona calisaya, which was already cultivated very extensively in Java at that time.

In 1868 the trees were attacked by a small insect, Helopeltis Antonii, the same insect which has greatly injured the tea plantations for a number of years, and is known and dreaded under the name of tea-rust. These insects, now also known as cinchona-rust, are peculiar to this species of cinchona, and greatly injure the young plants, baffling almost all efforts to exterminate them; when the trees have reached a certain age and size they are more able to resist the attacks of the insect. In 1872 the trees had grown to such an extent, in spite of the cinchona-rust, that portions of the bark could be removed and analyzed, although the trees had not yet been in bloom; the analysis yielded such an unusually large percentage of quinia that 200 kilograms of the bark sold at Amsterdam, at a public sale in 1873, brought on an average 4·62 florins, for ½ kilogram, more than double the price of the best American cinchona barks. When the trees were in bloom they were found to belong to

an entirely distinct species, which received the name *Cinchona Ledgeriana*, and being the most valuable of all cinchonas because it yields the most quinia, was now cultivated very carefully and extensively; 8,000 of the original 20,000 plants having died, only 12,000 trees remained in 1872. By thinning out the original plantations 9,200 kilograms bark were obtained until 1877 (included), which sold at Amsterdam for 89,853.32 florins. The harvest of 1878 amounted to 4,200 kilograms. Although the yields in twelve years probably amounted to 13,600 kilograms from 12,000 young trees, the original plantations now still contain more product than they yielded so far; besides, they have yielded millions of seeds, which have readily sold in Java and elsewhere. The government plantations now contain 6,300 original trees, 211,000 raised from seeds and 36,000 from shoots. Dr. Haskarl claims that even at the present date cinchona cultivation in Java, if carried on with prudence and care, requires comparatively but little capital, and usually proves a gold mine.

THE BOTANICAL SOURCE OF ARAROBA.

In a former note on Goa powder, which appeared in this journal,[1] it was suggested by Mr. E. M. Holmes that this drug might perhaps be derived from a species of *Cæsalpinia* nearly allied to *C. Sappan*, L. This opinion was founded partly on a microscopical examination of the structure of fragments of wood found in the araroba of commerce, and partly on the appearance of a single leaf of the araroba plant, which was found to bear a considerable resemblance in habit to those of *C. Sappan*. This leaf, kindly supplied from the Royal Botanical Gardens of Edinburg, was obtained from a slip of the plant brought home from Bahia by Dr. J. L. Paterson. Those who are well acquainted with the plants of Leguminosæ will readily acknowledge the difficulty of judging of the genus from a leaf alone, without flowers and fruit. These have at length been procured, and the true source of the araroba may now be considered to be definitely settled, and the mystery which has so long attended the natural history of the drug to be satisfactorily cleared up. This information is suppled by Dr. J. M. de Aguiar, who has just published at Bahia[2] a pamphlet contain-

[1] *Pharmaceutical Journal* [3], vol.v., p. 801, note.[2]

[2] Memoria Sobre a Araroba, pelo Dr. J. M. de Aguiar, Bahia, 1879.

ing a very full and detailed description of the plant, with illustrations of the leaves and flowers, a copy of which has recently been placed at our disposal by Mr. T. Christy.

According to Dr. de Aguiar the flowers and fruit which have been obtained show that the araroba plant is more nearly allied to *Centrolobium* than to *Cæsalpinia*, having truly papilionaceous flowers, and that it belongs to the genus *Andira* of the sub-tribe Goeffræeæ, which is characterized by having a hard drupaceous one-seeded fruit, sweet-smelling violet or purplish flowers arranged in panicles, a calyx with short teeth, and five distinct petals. From *Centrolobium* it is distinguished by the fruit, which in that genus resembles a samara and is furnished with prickles at its base.

The araroba plant is therefore nearly allied to *Andira inermis*, the bark of which was formerly a well known remedy in this country for intestinal parasites, under the name of cabbage-tree bark or worm bark.[1]

The following description is a *précis* made from the information contained in Dr. J. M. de Aguiar's pamphlet:

The plant from which araroba is extracted is one of the larger inter-tropical trees which are met with between 13° and 15° of latitude, south of Bahia, especially in the forests of Camamu, Igrapiuna, Santorem, Taperoa and Valencia, and rivals in height the tree commonly known under the name of Oleo (*Myrocarpus fastigiatus* or *Myrospermum erythroxylum*[2]), and sometimes attains even greater dimensions. The ordinary height of the tree is 80 to 100 feet; the trunk is straight, cylindrical, and in the two specimens which were measured in the thickest part one was 41 and the other 48 centimeters in diameter. The tree commences to branch at more than a third of its whole height, and forms a not very leafy head, having the form of a segment of a spheroid. The bark of the tree is not very thick and appears to contain scarcely any of the active principle of the plant. The wood has a yellow color, and is very porous, having numerous longitudinal canals visible to the naked eye, although these are more distinctly seen under a lens. The trunk in a transverse or tangential section presents lacunæ, more or less large according to the age of the tree, and in these a pulverulent substance (araroba) is found, which in trees recently

[1] Lewis, 'Materia Medica,' p. 320.

[2] Almeida Pinto, "Diccionaria de Botanica Brasileira," p. 335.

cut down and before being dried is of a light or pale tint, clearer than that of the wood. The medullary centre exhibits a canal different in appearance from the lacunæ, having a diameter much more considerable. The young branches are entirely fistulose.

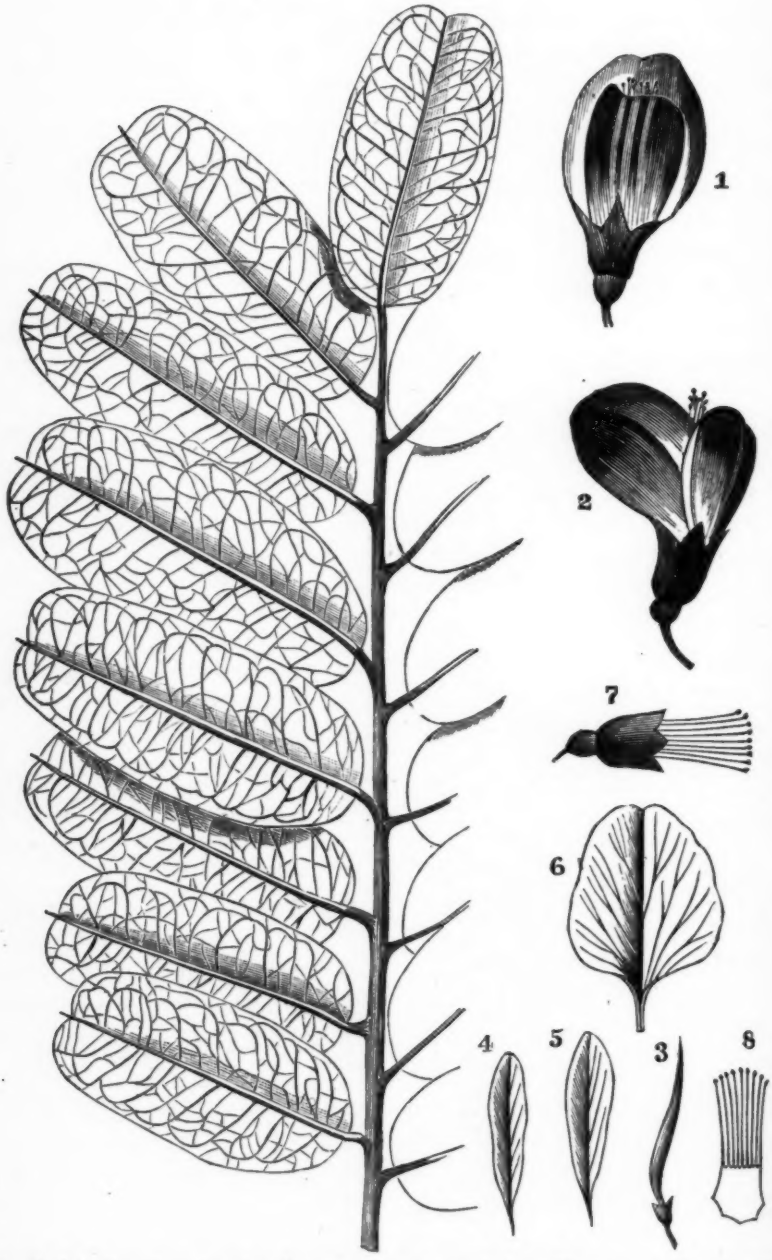
So far these particulars seem to correspond exactly with the statement of Dr. Rameiro A. Monteiro, published in the *Journal de Thérapeutique*, vol. vi., p. 248.[1]

The following details, however, have not, so far as is known, been before published in this country.

The leaves are alternate, compounded and paripinnate. The petiole in two specimens which were measured was in the one 32 and in the other 44 centimetres in length, having a variable number of pairs of stalked leaflets, in one specimen 20, and in another 24. The leaflets are alternate and articulated, oblong, obtuse, entire and emarginate at the apex, measuring from $2\frac{1}{2}$ to $4\frac{1}{2}$ centimeters in length, and from 1 to $1\frac{1}{2}$ centimeters in width. The distance between the points of insertion of the leaflets is about 2 centimeters, so that the leaflets only slightly overlap each other.

The common petiole or rachis is slender, convex on the under surface, and hollowed above into a small, very smooth furrow; the secondary petioles which measure about half a centimeter in length are accompanied for a small distance by the rudiments of stipels. The leaflets are feather-veined, of a green color on the upper surface and of an ashy hue beneath. The inflorescence is centripetal, consisting of a panicle with a variable number of racemes, each of which consists, in the more luxuriant specimens, of about eight flowers or flower buds. The flowers are shortly stalked, alternately arranged, and are each furnished with a bract, which does not develop at the same date as the flower, and hence the lower bracts appear smaller than the upper ones. The common peduncle is bare of flowers at the base for about a third of its length. The flowers are purple, papilionaceous, measuring $2\frac{1}{2}$ to 3 centimeters without the claw, which is about $\frac{1}{2}$ centimeter long. The *calyx* is gamosepalous, 2 centimeters long, covered with rusty-colored hairs, a little flattened on three faces, like a triangular prism with rounded angles, the dorsal angle being the more prominent and corresponding to the middle of the standard. The calyx is five-toothed, the

[1] *Pharm. Journ.* [3], vol. viii., p. 1048.



Leaf of *Andira Araroba*, showing venation; natural size. Flower—1. Showing three lower teeth of calyx; 2. Corolla, lateral view; 3. Pistil; 4. Petal of keel; 5. Petal of wing; 6. Standard; 7. Stamens in situ, after removal of corolla; 8. Monadelphous stamens, separated from calyx.

two upper teeth being larger and longer and separated by a more obtuse angle than the other three, which are equal and of which two correspond in position to the wings of the corolla and the central one to the keel.

The *corolla* consists of five clawed petals, the standard being entire, orbicular, about 2 centimeters in diameter, slightly emarginate at the apex, and furnished with a claw about ½ centimeter long, and consisting in great part of the thickened middle vein of the standard. The alæ or wings are obovate, elongated, about 16 millimeters long by 6 broad, curved towards the base, and forming a longitudinal and oblique sinus[1] (gotteira) near the top of the claw on the side opposite to the standard, the claw being about 7 millimeters long. The two petals forming the keel are similarly formed, but less curved, and 4 or 5 millimeters broad. The *stamens*, nine in number, are monadelphous and perigynous, about 2 centimeters long, and adherent for about a third of their length, but having a slit opposite to the middle of the vexillum. The anthers are ovoid with a longitudinal furrow on their inferior surface, in the middle of which the filament is inserted. The upper surface is convex and smooth. The *pistil* consists of a single carpel, and exceeds the stamens in length by 1 or 2 millimeters. The ovary, which has a stalk about 4 millimeters long, is flattened at the sides, and presents two salient lines or rudimentary wings. The ovary and style (the latter for two-thirds of its length only) are covered with rusty hairs. The ovary is convex on the side opposite to the slit in the androphore, and concave on the side nearest to the two lateral wings.

The ovary is one-celled and one-seeded. The embryo is curved, and the seed exalbuminous. The arillus is short and tortuous.

From the above description it will be seen that the araroba plant belongs to the Leguminosæ, and to the tribe of Dalbergieæ. It much resembles in some characters *Dalbergia miscolobium*, Benth., and *Andira fraxinifolia*, Benth. Neither of these two plants, nor the *Andira inermis*, has the obtuse emarginate leaflets which characterize the araroba tree.

The author believes the plant to have been hitherto undescribed, and proposes the name of *Andira Araroba*, Aguiar, for it, since the drupaceous fruit, panicled inflorescence, purple flowers and the other

[1] This is not well shown in the original wood-cut.

characters above mentioned clearly point to its being an *Andira*. This opinion is further strengthened by the fact that some other Andiras possess parasiticidal properties, and that the natives, who call the *A. anthelmintica* "Angelim de folha grande," the *Andira Fraxinifolia* "Angelim doce," and the *A. stipulacea* "Angelim Coco," also call the *A. Araroba* "Angelim amargoso," thus recognizing a close alliance in the plants.

With regard to the production of the araroba, the author gives it as his opinion that it is formed by the oxidation of the resin which exists in great abundance in the tree, the oxidation being facilitated by the canals made by insects. He explains the presence of the larger cavities in the tree by the corrosive action of the araroba on the wood. He has not, however, as yet confirmed his theory by experiment. The araroba is collected throughout the year, the older trees being selected because the powder occurs in them in greater abundance. The trunk is cut into sections transversely and these are then split longitudinally. The portions containing powder are then chipped or scraped off with an axe, which is done the more easily as the wood in these parts offers but little resistance. The color when freshly collected varies from that of the flower of the cotton plant (pale primrose color), becoming by the action of the air darker, to that of rhubarb, and finally dark purple. The commerce of this article is now chiefly developed in Camamu and Taperoa, although the tree exists in abundance in all the southern part of the Province of Bahia and, according to Drs. Bomfim and Agnello Leite, also in the forest of Sergipe. The tree is not cultivated, but propagates itself spontaneously.—*Phar. Jour. and Trans.*, July 19, 1879.

NOTES ON CINCHONA BARK.

By David Howard.

Recent importations of East Indian cinchona bark have thrown light on several points worthy of the notice of those interested in the subject.

The officinalis bark from the Government Plantation at Dodabetta gives us some valuable information as to the effect of age on the value of the bark. The date of the plantation from which each parcel was obtained was given, and we thus have a series of barks, classed as

natural, mossed and renewed from trees planted each year from 1863 to 1867.

As "natural" bark from the lower stems is only obtained from trees not yet treated for "renewing," it is evident that in the older plantations the natural bark will be chiefly from the upper stem or from saplings and inferior trees, and thus, as Dr. De Vrij has shown, will be of inferior quality.

The result shows this to be the case, the best parcel of natural bark being from the plantation of 1867, that from the other plantations being of uneven quality, showing no regular variation. The mossed bark on the other hand may fairly be taken to represent the oldest bark from the main stems in each plantation, and therefore is the best guide as to the influence of age on the quality of the bark.

The result is highly satisfactory, showing that as yet the bark from the oldest plantations, so far from deteriorating, continues to improve. Both the quinia and the total crystallizable alkaloid steadily increase from the bark of the 1867 plantation to that of 1864, that of the 1863 plantation yielding the same quinia as that of 1864, and slightly more cinchonidia and quinidia.

It is certainly more likely that so regular a progression is the result of greater maturity than that the difference should be caused by any variety in the *C. officinalis* cultivated.

This is a most important point, for recent importations of the bark of *C. succirubra* confirm the opinion so often expressed by my uncle, J. E. Howard, F.R.S., and by Mr. Broughton, the late Quinologist to the Indian Government ("Quinology of the East Indian Plantations," p. 71), that in this species the bark deteriorates beyond a certain age. It is difficult to say exactly what that age may be, and it probably varies according to the growth of the tree, but some of the very finest of the red bark now coming from India, as far as appearance goes, certainly seems to have passed its maximum of richness in quinia.

As to the "renewed" officinalis bark, the time during which the different parcels have been forming is not given, nor is it stated whether it is from the first, second or later crops, and therefore the comparison may not be accurate; but it is interesting to see that here also the older plantations show no deterioration, the best being from the 1863 plantation.

From a private plantation I have received a sample of root bark of

C. officinalis from trees which were coppiced three years ago. It gives quinia 2·2 per cent., cinchonidia ·2 per cent., quinidia 1·5 per cent., and cinchonia 3·3 per cent.

The stem bark from this plantation, at the time when the trees were cut down, gave: quinia 2·6 per cent., cinchonidin ·6 per cent., cinchonin 1· per cent., and but a trace of quinidin.

We find, therefore, that in this sample the ordinary tendency of root bark to produce the dextrogyrate alkaloids is developed to a most unusual degree, the percentage of quinidin is a most extraordinary one for bark from *C. officinalis*.

I have also received from Darjeeling a very interesting sample of the bark of *C. succirubra* accidentally renewed. It is entirely the produce of accidental injuries to the trees (not deep enough to injure the cambium, and prevent the bark forming over the whole surface), no protection whatever having been given where the bark was removed.

The result is as successful as could have been expected from renewing under the most favorable conditions, the contained alkaloids being, quinia 2·3 per cent., cinchonidia 1·5 per cent., cinchonia 1·2 per cent., quinidia ·1 per cent.

Two parcels of the stem bark sent over at the same time from this plantation gave, first, quinia ·8 per cent., cinchonidia 1·2 per cent., cinchonia 1·2 per cent., and secondly, quinia ·9 per cent., cinchonidia 1·1 per cent., cinchonia 2·0 per cent.

The improvement in value in renewed bark is, therefore, not owing to the covering, but is found equally in this accidentally renewed bark, and it would seem that the mossing is valuable chiefly as enabling the tree to produce the renewed bark with as little injury to its health as possible. It will probably be found that a less perfect shelter than moss may in some circumstances be sufficient to preserve the health of the tree under this process.

It has been proposed by M. Moens to shave off the outer layers of bark without cutting quite through the bark. No doubt the cellular portion of the bark is richer in alkaloids than the inner fibrous layer (*vide* "Quinology of the East Indian Plantations," by J. E. Howard, F.R.S., pp. 23, 24 and 38), although the corky excrescences thrown out by the variety of *C. officinalis*, the "knotty bark of Jussieu," contain but little alkaloid ("Pharmaceutical Journal," third series, No. 454, p. 769; "Quinology of the East Indian Plantations," p. 70).

The inner and outer portions of a sample of the bark of *C. succirubra* give the following results:

	Quinia.	Cinchonidia.	Cinchonia.
Inner, . .	·6 per cent.	1·2 per cent.	1·4 per cent.
Outer, .	1·2 "	1·4 "	1·7 "

It will be noted that not only is the total alkaloid more in the outer bark, but the quinia is in greater proportion, and, therefore, the outer bark would be of much greater value per pound to a manufacturer than the whole bark.

The practical value of the process chiefly depends on the effect on the tree. If, when thus treated, the tree throws out fresh bark of a similar quality to that produced in the old method of renewing without greater injury to its health, the process may be successful, but of course it is essential not to cut so deeply as to injure the cambium, and thus destroy the recuperative power of the bark.—*Phar. Jour. and Trans.*, Sept. 6, 1879.

SPIRIT OF NITROUS ETHER.

By J. U. Lloyd.

Read at the Twenty-seventh Annual Meeting of the Amer. Pharmaceutical Association.

As made by the official process, this is liable to be of different strengths ethereally, even with great care from the manipulator. It may also contain free nitric acid, and occasionally H_2SO_4 from the bursting of bubbles in the retort, thus throwing fragments of liquid upward with considerable force, often making the inside of the retort resemble spray when in sunlight. Towards the end of the process I find also a little water distills over, which tends to hasten subsequent decomposition. The specific gravity of U. S. P. nitrous ether is given at 0·837. I find the specific gravity of nitrous ether made from alcohol, to which is added 5 per cent. nitrous ether, to be 0·835. Four years ago I became convinced that the officinal process could be improved upon. Accordingly, I have modified the formula in such a manner that the product will always be of a definite strength, while at the same time not materially altering the present process. Indeed, the formula of the present Pharmacopœia may be left unaltered up to the words: "Distill two fluidounces as before," when I would proceed to say: "Add the distillate to its bulk of solution of chloride of cal-

cium and cautiously agitate. Separate by means of a separating funne the lower solution, and immediately add 5 parts of the ethereal liquid to 95 parts of alcohol."

I suggest, however, that sulphuric acid be added to the alcohol in the retort in a small stream with agitation, then add the nitric acid, then distill until the distillate equals one-third the alcohol. There is no economy in carrying the operation further. There is no necessity for the copper practically, in a manufacturing way, and I have discarded it, as I get as great a yield of ether without, and the operation progresses in every way as nicely. (The copper theory is beautiful, however, and perhaps it will not do to make too radical a change; the copper certainly does no harm.) My ordinary still is 22 gallons, stone, with 40 feet of stone coil. The charge of alcohol is 6 gallons, and the yield of ether spirits is from 40 to 90 pounds; but in a small way it may be larger, as I use ice water to separate the ether, which will not do this effectually. The use of sulphuric acid is necessary to take water from the nitric acid. Change the wording of the present formula, at any rate, so that it will read that the condenser and receiver *both* must be kept cool with ice water. I find even with this precaution my yield of actual 5 per cent. spirit lessens one-third in hot weather. If ordinary water is used there is no ether separated in summer.

SWEET SPIRIT OF NITRE—WHAT IT WAS, IS AND OUGHT TO BE.

By W. Smeeton.

Under the above comprehensive title appeared a paper, written by Mr. Rimmington, of Bradford, in the November number of the Journal for 1877.[1] It provoked a discussion, and the facts that appeared to come out were that the ethereal liquid, which is produced when alcohol and nitric acid are distilled together by the B.P. process, is a compound of alcohol, nitrite of ethyl, aldehyd, and perhaps other unknown substances, and that the B.P. process would always yield an article containing the same proportion of the same ingredients. But at the outset, Mr. Rimmington condemned the B.P. process as being unnecessarily

[1] See "Amer. Jour. Phar.," 1877, p. 620.

complex, and one that probably did not meet with universal adoption. Of course this might be said of any process, and the quantity to be operated upon will also be a modifying agent. Mr. Rimmington's remarks respecting the directions to allow the still to cool before adding more acid were quite to the point; but if, on the other hand, the whole of the acid is added to start with the action is very violent, and if the quantities dealt with are large, it is almost sure to lead to loss of ether. If the acid is added later on without waiting for the cooling, red fumes are apt to come over. In this dilemma we are left, and we should have been under obligation had Mr. Rimmington pointed out a more excellent way. Mr. Umney has also stated that nitre made by the B.P. process was unfavorably received, and I suppose most manufacturers must occasionally have found the results unsatisfactory.

Just before the British Pharmacopœia came out, Professor Redwood read a very exhaustive article on spirit of nitre, explaining the B.P. process, and briefly reviewing other processes. The Edinburgh and Dublin forms of making hyponitrous ether first, were dismissed as not being applicable for large quantities and expensive. There may be something in this, for whatever Professor Redwood states is so well considered that it may always be taken as correct. Still, after trying several processes, I have come to the conclusion that with the quantities with which I deal, none is so satisfactory as the Edinburgh plan. It is as easy and takes less time, but what is of much more moment, it makes a nitre that is very pleasant and uniform in character. I am not sure it is the best plan, but it is the best I know, and I do not find it very difficult to manipulate.

I take twelve pints of acohol and add to it carefully three pints of nitric acid either at once or in successive portions. This is placed in a still having a capacity of eight gallons, connected with a stone worm and Woulfe's bottles to catch what escapes the first condenser and receiver. Action will sometimes commence without artificial heat; if it does not I turn on steam till it does, but before the temperature reaches 140°, distillation commences rapidly at first and requires very careful condensation. The distillate is in appearance and quantity about the same as that obtained by the B.P. process, but I think it is more ethereal and certainly more acid. It is now neutralized with milk of lime, and solution of chloride of calcium added. The nearly pure ether separates, floats on the surface, the heavy liquid below contains

the alcohol of the distillate, and certainly most if not all the aldehyd and possibly other products. With the hope of utilizing the washings and recovering alcohol or ether, I have redistilled them with lime and filtered through charcoal, but it is bad smelling, ultimately goes yellow, and is best out of good spt. nitre, though not worse than much that is sold. The main difficulty of this process is the volatile character of the ether, rendering the separation by a syphon a somewhat risky process, and giving, if inhaled, a most cadaverous hue to the operator. Great care has also to be taken when the water and lime are added to keep all very cold, as the mixture with the spirituous liquid generates heat enough to make the ether boil. With these precautions the process is not more than ordinarily difficult. One ounce of the ether with a pint of spirit makes nitre of 5 per cent. strength; two ounces 10 per cent. or B.P. strength, as Mr. Rimmington has pointed out. The 5 per cent. is, I think, strong enough for medicinal purposes, and would generally be preferred.

In conclusion, I beg to say that whether this is the spt. nitre that is to be, or not, it has much to recommend it. It has a beautiful sweet flavor, something like chloroform, and I believe is free from aldehyd and other noxious products.—*Phar. Jour. and Trans.*, July 12, 1879.

SPIRITUS ÆTHERIS NITROSI—ITS COMPOSITION AND ANALYSIS.

By F. M. Rimmington, F.C.S.

The nature, substance and quality of spiritus ætheris nitrosi has long been a problem asking for solution; and as I have given a good deal of attention to it for a long time, and feel myself under a pledge to contribute another paper on the question raised some time ago as to the actual existence of nitrite of ethyl in this compound, I now purpose fulfilling that promise.

Perhaps some discriminating minds will draw a distinction between sweet spirit of nitre and spiritus ætheris nitrosi. I make no such distinction, and all that is said in this paper has reference to a spirit that corresponds with that described in the British Pharmacopœia, in nature, substance and quality.

I think all who have attempted the analytical examination of this preparation will admit it is surrounded with some difficulty.

There is first, an ethereal fluid, so designated; secondly, an ethereal oil or hydrocarbon; thirdly, aldehyd; fourthly, nitrous acid, uncombined; fifthly, acetic acid uncombined; sixthly, alcohol and water.

The presence of nitrite of ethyl in the spirit of the Pharmacopœia has been denied; and I am willing to admit it may be possibly true, but if true, it is culpably wrong, and it is the result of mismanagement. If no nitrite of ethyl be formed, what becomes of the nitric acid used in the operation, and what are the products of the chemical action that takes place? It does not distil over, it does not pass away as gas, but it is nevertheless consumed.

After many attempts to investigate this matter, and trying all the methods that suggested themselves to me, or that I could find described for the estimation of the nitrites, I found none that gave satisfactory results until I adopted the following scheme, by which not only the nitrite of ethyl, but all the other constituents, may be accurately estimated.

The following table, at all events, shows the results in two analyses (out of a great many others) of a typical sample, agreeing with the B.P. test, etc.:

	(1.)	(2.)
Water,	7·96	7·93
Aldehyd,	1·19	1·19
Alcohol,	88·10	88·10
Acetic Acid,	·47	·50
Nitrous Acid,	·59	·56
Nitrite of Ethyl,	1·69	1·72
	100·00	100·00

The method of analysis is as follows:

The nitrite of ethyl is to be estimated by the conversion of its nitrogen into ammonia, first by decomposing it with pure potash into KNO_2, and distilling this with a zinc and copper couple somewhat after the method recommended by Thorpe, but modified by Dr. Cornelius Fox, and titrating the result with standard acid (process in detail given below).

The amount of nitrous and acetic acids are estimated volumetrically. The two acids are afterwards separately estimated.

Aldehyd is estimated by conversion into acetic acid by peroxide of hydrogen, and titrated.

Water and alcohol by difference.

Estimation of Nitrite of Ethyl.—5 cc. of the spirit are added to 1 gram of pure potash (free from nitre) dissolved in 40 cc. of pure water in a 50 cc. graduated flask, stoppered and capped with leather, digest in a warm place at a temperature of 150° to 200°F. for three hours. Allow the flask to cool and then dilute with water to 50 cc., shake and then take out with a pipette 10 cc. of the liquid and run it into a platinum dish, and add to it 40 cc. of water, evaporate on a water-bath to 20 cc. to get rid of the alcohol, etc. This residue is now to be washed into a flask of 16 ounces (or 450 cc.) capacity, containing 10 grams of zinc foil coated with copper, and the volume of liquid made up to about 350 cc. with water, and connected with a condenser; heat is now to be applied and the distillation carried on as usual. Most of the ammonia comes over in the first 100 cc. of distillate, but it is necessary to distill another 50 cc. to ensure perfect exhaustion. The ammonia thus obtained is now to be estimated with a standard sulphuric acid, 1 cc. equal to ·001 gram ammonia.

The amount of NH_3 found is to be multiplied by $100 \times \cdot 824$ which will equal the total nitrogen in the spirit; and this, minus the nitrogen present in the free nitrous acid, when multiplied by 5·357 will give the nitrite of ethyl contained in the spirit.

Estimation of Nitrous and Acetic Acids.—The amounts of these two acids are necessary to be known in order to judge of the quality of the preparation, and for correctly estimating the nitrite of ethyl. 10 cc. are to be measured with a pipette and run into a platinum dish, and diluted with an equal volume of pure water, and ·5 gram carbonate of potash added, and stirred until dissolved; the solution is then evaporated on a water-bath to dryness. This saline residue is now to be treated with 5 cc. of pure alcohol for the separation of the potassium acetate, from the potassium nitrite, and again repeated, and the mixed solutions filtered through a very small Swedish filter; this filtrate evaporated in a tared capsule to dryness, and rapidly weighed. The weight minus ·021 gram (the weight of KNO_2 which is dissolved by 10 cc. of alcohol) and the amount multiplied by ·6122 gives the quantity of acetic acid present in the spirit.

The amount of acetic acid thus found, multiplied by ·7666 gives the equivalent of NO_2 to which it is equal, and this product deducted from the total acidity (previously determined alkalimetrically), leaves the net amount of NO_2 present.

Estimation of the Aldehyd.—Into a 25 or 50 cc. flask run 10 cc. of the spirit, and add 10 c.c. of peroxide of hydrogen, and let it stand two or three hours; by this time the aldehyd will have become converted into acetic acid, and may be estimated by decinormal alkali; the amount thus determined, less the number of cc. required by the free acid previously determined, multiplied by ·0044 will give the amount of aldehyd.

Estimation of Alcohol and Water.—The alcohol is estimated by the specific gravity, and the water by difference.

The foregoing scheme of analysis probably may look formidable in the eyes of very practical people. It certainly involves some nicety of selection of materials, as to purity, but otherwise it is not difficult.

I append the statement of analysis of four samples of spirit of nitrous ether, obtained from different sources and represented as the "best."

	No. 1.	No. 2.	No 3.	No. 4.
Water, . .	10·55	14·12	16·17	15·49
Aldehyd, . . .	·75	·21	·26	·co
Alcohol, . .	87·5	85·2	82·60	83·6
Acetic Acid, . .	·16	·03	·18	·16
Nitrous Acid, . .	·29	·27	·69	·68
Nitrite of Ethyl, . .	·75	·17	·10	·07
	100·00	100·00	100·00	100·00

The nice gradation of quality here exhibited, without any design, is very remarkable.—*Phar. Jour. and Trans.*, July 19, 1879.

THE TWENTY-SEVENTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

First Session, Tuesday, September 9th.—The pharmacists of Indianapolis had secured the use of the Supreme Court-room for holding the annual meeting, for which purposes it proved to be admirably adapted. Shortly after 3 o'clock the meeting was called to order by President Luhn, and the Hon. John Caven, Mayor of Indianapolis, being introduced, addressed the Association and extended to the members a cordial welcome, to which the President briefly responded. The various delegations handed in their credentials, which were referred to a committee consisting of Messrs. A. E. Ebert, of Illinois; T. Roberts Baker, of Virginia, and Jos. L. Lemberger, of Pennsylvania. While the committee attended to the duties entrusted to them, the President delivered his annual address, in which he dwelled particularly upon the objects of the Association, the work it has accomplished and the labor which is still before it. The address was referred to a committee, consisting of

Messrs. Jos. Roberts, of Maryland; E. H. Sargent, of Illinois, and C. F. Hildreth, of New Hampshire, to consider and report upon the recommendations and suggestions contained therein.

A large number of invitations from public institutions and business houses were received, and since, in many cases, the appointment of a time for a visit by the members and their families was requested, all invitations were referred to Messrs. J. M. Good, of Missouri; F. M. Harper, of Indiana, and Chas. W. Hancock, of Pennsylvania, with the view of ascertaining whether the Association could pay these visits without interfering with the business before it.

On motion of the Business Committee, a cordial invitation was extended to the members of the Medical College of Indiana, the Central College of Physicians and Surgeons, the Marion County Medical Society and of the Lyceum of Microscopy; also to the Governor, the State officers, the Judges of the Supreme Court and the Mayor, to attend the sessions.

The Committee on Credentials presented a report, according to which delegations had been accredited to this meeting from nine colleges of pharmacy, nine State pharmaceutical associations, three local pharmaceutical societies and seven alumni associations of pharmaceutical colleges. In addition to these, Mr. Henry P. Thorn was admitted as a delegate from the New Jersey Pharmaceutical Association, whose credentials had not been received. Several associations being represented for the first time, the President extended a hearty welcome to their delegations. The roll being called, seventy-four members were found to be present.

The Executive Committee reported the names of fifty-eight candidates for membership, who had duly applied and been recommended by members in good standing. Objection being made, one name was withdrawn, and a ballot was ordered for the remaining candidates, Messrs. Candidus of Alabama and Gardner of New Jersey acting as tellers. Several black balls having been deposited, supposed by some members in mistake, another ballot was had with similar results, but the black balls accompanied by slips of paper referring to one of the candidates. Since, under the rules of the Association, a separate ballot for each candidate would now have been required, a motion was made and carried that, with the exception of the one objected to, the remaining fifty-six be declared elected. As soon as the result was announced a motion for reconsideration of the ballot was made, but lost, when a point of order was raised by the Business Committee that the fifty-six candidates were not elected under the existing rules. The point of order was sustained by the chair, and no appeal being taken a ballot was now taken on the fifty-six candidates, who were unanimously elected. Considerable time had been consumed by these proceedings, and a motion for the appointment of a committee to make definite and uniform the manner of balloting for members met with unanimous response. Messrs. Jos. P. Remington, J. U. Lloyd and J. F. Judge were appointed this committee.

One member from each delegation, of which one was not represented, although the credentials had been sent, was appointed to serve on the Nominating Committee, to which Messrs. C. E. Ferris, of Indiana; F. H. Butler, of Massachusetts; R. W. Gardner, of New Jersey, E. Bocking, of West Virginia, and G. A. Newman, of Kentucky, were added from the Association at large.

The chair appointed the following Committee on Exhibition: Prof. H. D. Garrison, Chicago; Chas. C. Spannagel, Philadelphia; J. B. Dill, Indianapolis; A. R. Bayley, Cambridgeport, Mass., and Emil L. Boerner, Iowa City.

The report of the Executive Committee was now read by the chairman, G. W. Kennedy, and referred to the Committee on the President's Address, after which the Association adjourned until the next morning at 9 o'clock.

Second Session, Wednesday Morning, September 10th.—After the meeting had been called to order by the President, the minutes of the first session were read and approved. The Nominating Committtee, through Mr. T. R. Baker, presented the following nominations: President, George W. Sloan, Indianapolis; First Vice-President, T. Roberts Baker, Richmond, Va.; Second Vice-President, Joseph L. Lemberger, Lebanon, Pa.; Third Vice-President, Philip C. Candidus, Mobile, Ala.; Treasurer, C. A. Tufts, Dover, N. H.; Permanent Secretary, John M. Maisch, Philadelphia, Pa.; Reporter on the Progress of Pharmacy, C Lewis Diehl, Louisville, Ky.; Executive Committee—George W. Kennedy, Pottsville, Pa., chairman; Adolph W. Miller, Philadelphia, Pa.; William Silver Thompson, Baltimore, Md.; Thomas W. Casper, Springfield, Ohio; John M. Maisch, *ex-officio*, Philadelphia, Pa. Committee on Drug Market—Louis Lehn, New York, chairman; Henry W. Fuller, Chicago; Solomon Carter, Boston; Benjamin F. Morse, Charleston, S. C.; James G. Steele, San Francisco. Committee on Papers and Queries—J. U. Lloyd, Cincinnati, chairman; Robert H. Cowdry, Chicago; Charles Mohr, Mobile. Business Committee—H. J. Menninger, Brooklyn, chairman; Eli Lilly, Indianapolis; Charles L. Eberle, Philadelphia. Committee on Prize Essays—C. Lewis Diehl, Louisville, chairman; John F. Judge, Cincinnati, O.; Emil Scheffer, Louisville. Committee on Legislation—John M. Maisch, Philadelphia, chairman; Jesse W. Rankin, Atlanta; Samuel A. D. Sheppard, Boston.

The report was accepted and the nominees balloted for and elected, Messrs. Eberle, of Philadelphia, and Griffith, of Niagara Falls, acting as tellers. The chair appointed Messrs. Gordon, of Ohio, and Ross, of Pennsylvania, a committee to conduct the President and Vice-Presidents elect to the platform, when they were introduced to and briefly addressed the meeting.

The annual report of the Secretary, which was now read, contained various suggestions looking towards curtailing the expenses, and was referred to a committee consisting of Messrs. Joseph Roberts, of Maryland; E. H. Sargent, of Illinois, and C. L. Eberle, of Pennsylvania; the Permanent Secretary, Treasurer and Chairman of the Executive Committee being subsequently added to it by special vote of the Association.

The Treasurer presented his annual report, showing a balance on hand at the beginning of the meeting, amonnting to $980·98. It was referred to an auditing committee consisting of Messrs. John Ingalls, of Georgia; Charles A. Heinitsh, of Pennsylvania, and George Buck, of Illinois.

The Report on the Drug Market, written by Mr. W. H. Wickham, and a supplementary report on the California Drug Market, by Mr. James G. Steele, were read by the Permanent Secretary and referred for publication.

On motion of Mr. Diehl, a committee of three was appointed to aid the Com-

mittee on the Centennial Fund in making up the required amount. Professors Bedford, Good and Diehl were named for this service.

An amendment to the by-laws, proposed by Professor Markoe, requiring the officers elected to take their respective places at the opening of the last session instead of immediately after election, was negatived at a subsequent session.

On motion, Prof. Remington was appointed official reader of such papers and reports which are not read by their authors.

The introductory portion to the report on the progress of pharmacy was read by Prof. Diehl and, together with the entire report, referred for publication. Action on the report made in relation to uniformity of election of members was under the rules deferred to a subsequent session, a modification of the by-laws being involved.

Invitations to the Association to hold the next annual meeting in Kansas City, Mo., and in Saratoga, N. Y., were read and referred to a committee of three, to which the chair appointed Messrs. Vincent Davis, of Louisville; W. H. Crawford, of St. Louis, and H. E. Griffith, of Niagara Falls, N. Y. The Association then proceeded in a body to the exhibition room for the purpose of examining the numerous articles of interest shown, and subsequently adjourned until 3 o'clock P.M.

Third Session, Wednesday Afternoon, September 10th.—At the afternoon session a report from the Committee on Invitations was read, recommending that the Local Committee be requested to make arrangements for Friday afternoou after the final adjournment for visiting certain institutions and establishments in a body. The recommendation was adopted. The special order of business referred to this session from the twenty-sixth annual meeting was, on motion, postponed until Thursday afternoon, after the reception of the reports of the committees on the various annual reports.

The Committee on Prize Essays was granted further time in view of the late date of publishing the last Proceedings and because of the absence in Europe of Prof. Scheffer, one of the members of the committee.

The report of the Committee on Legislation gave an account of the pharmacy laws enacted during the past year, one for Brooklyn, N. Y., and an amended and improved act for the State of New Jersey.

An essay on *Eriodictyon californicum* (*yerba santa*), by Chas. Mohr, was read in answer to Query 4. According to the author's analysis, the air-dry drug contains 12·5 per cent. of moisture and 43·31 per cent. of wood fibre and ash, and yields to ether 14·98, to alcohol 10 79 and to water 18·42 per cent. of its constituents. More than one-half of the etherial extract (8 parts) consists of a bitter, acrid and brittle resin, the remainder being inert green coloring matter, caoutchouc, a little wax and a small quantity of tannin. The alcoholic extract contains inert resin and a larger quantity of a peculiar glucoside of the tannic acid series, and related to if not identical with that found by the same author in Pycnanthemum linifolium. The aqueous extract contains the same tannin, gum, brown extractive and a trace of sugar. The fluid extract should be prepared with alcohol of 70 or 75 per cent. strength. The reputed medicinal virtues of the drug appear to be doubtful.

Mr. Geo. W. Kennedy read a paper in answer to Query 10, on *fluid extract and syrup of senega*, which the author recommends to prepare by exhausting the root

with diluted alcohol to which a little ammonia has been added (3 fluidrachms for 16 troyounces of senega). Gelatinization is thereby prevented, and the preparations are strongly acrid to taste.

A very valuable and practically useful contribution was made by Mr. P. C. Candidus, in answer to Query 13, the subject being the *changes of bulk produced by dissolving solids in liquids.* We hope to reproduce this paper in a future number, and note with pleasure that the author will continue his investigations.

The next paper was an essay on *the conditions necessary to successfully conduct percolation*, by Mr. J. U. Lloyd. It is impossible to give in this place a brief abstract of the theoretical deductions and of the numerous experiments detailed by the author; a perusal of the entire paper will be required to fully appreciate it. On motion of Professor Diehl, seconded by Professor Maikoe, a vote of thanks was tendered to the author.

The absorption of moisture by glycerin in open vessels was discussed by Mr. G. W. Kennedy in a paper detailing a number of experiments commenced November 2, 1877, and continued to September 4, 1879. Similar observations, though extending over a much shorter period, were reported to the Pharmaceutical Society of Great Britain by Mr. W. Willmott (see "American Journal of Pharmacy," 1879, p. 313). Mr. Willmott determined the cessation of the absorbing power of glycerin after it had combined with three measures of water, or in other words, when the mixture consisted of 70 parts, by weight, of water and 30 parts of glycerin. According to Mr. Kennedy's observations the amount of moisture absorbed by glycerin in flat jars was, in 12 months, 59·4 per cent., and was in 22 months, in narrow-mouthed bottles, 21 per cent., and in wide mouthed bottles 45·8 per cent.

In a volunteer paper *on the medicinal preparations from herbs* Mr. William T. Ford advocated that all liquid and solid galenical preparations be assayed and brought to a definite standard of strength.

Mr. Wellcome gave some information in relation to the cultivation in this country of exotic medicinal plants.

The President appointed Professor Good to act on the committee on the time and place of the next annual meeting, in the place of Mr. Crawford, in case the latter gentleman, who had been suddenly taken sick, should be unable to serve. Fortunately Mr. Crawford's illness was not serious.

An adjournment was had until Thursday morning at 9 o'clock.

Fourth Session, Thursday Morning, September 11th.—After the approval of the minutes of the third session a paper by Mr. Wm. Saunders on the *preparation of infusions and decoctions from fluid extracts* was read. In estimating the relative value of the preparations, the author relied on the evidence of the senses of taste, smell and sight as affording the most satisfactory basis of comparison, and found that infusions nearly identical with those prepared from the drug could be made from the fluid extracts of cinchona flava, digitalis, krameria, pareira, senna, spigelia, taraxacum, while fluid extract of calumba yields a stronger infusion than the drug itself. On the other hand, the fluid extracts of buchu, rheum, serpentaria, valeriana and zingiber, when diluted with water, yield mixtures which even after filtration remain very unsightly, though mostly stronger in taste than the corresponding infusions

prepared from the drug. An infusion of wild cherry prepared from the bark is quite superior to that made from the fluid extract. By reducing to a certain extent the alcoholic strength in preparing the fluid extracts of buchu, rhubarb, serpentaria and valerian, these preparations could be used with advantage for making the corresponding infusions. In the preparation of decoctions of the seven drugs of which also fluid extracts are officinal, better results were obtained in each instance by the use of the latter and subsequent filtration.

The report of the Committee for Devising an Improved Plan for the Election of Members was taken up and, after discussion, adopted. It provides for the announcement of applications for membership at one session and a ballot at a subsequent session, when a vote of two-thirds shall be sufficient to elect.

The same committee also suggested the appointment of a committee of five to mature a plan for the organization of a business council who should be charged with the duty of attending to all matters of a business character, and thus relieve the Association so that more time could be given to the reading and discussion of papers and essays of a scientific and practical character. The appointment of such a committee being ordered, it was constituted as follows: Messrs. Remington, Judge, Lloyd, Markoe and Sargent. It will report at the next annual meeting.

Mr. Roberts read reports of the Committees on the President's Address and on the Secretary's and Treasurer's Reports, which were accepted and referred to Prof. Remington for the purpose of formulating such portions involving a change of the by-laws.

The Auditing Committee reported that they had found the Treasurer's accounts correct.

Prof. Diehl read the report of the Committee on Revision of the Pharmacopœia and a number of typical formulas and other abstracts, for the purpose of showing the manner in which the work has been performed.

A paper on the *preparation of diluted alcohol* (*sp. grav.* 0·941) *from a stronger alcohol*, by Prof. Wm. T. Wenzell, was read. The paper gives an elaborate explanation of the manner in which the figures have been arrived at, and concludes with a table, according to which diluted alcohol is produced from alcohol having the

Specific gravity at 60°F.	or 77°F.									
·817	·809	by mixing alcohol,	11	parts and water,	15	parts, by weight.				
·819	·811	"	"	3	"	"	4	"	"	
·822	·814	"	"	39	"	"	51	"	"	
·825	·817	"	"	39	"	"	50	"	"	
·827	·819	"	"	4	"	"	5	"	"	
·830	·822	"	"	13	"	"	16	"	"	
·833	·824	"	"	5	"	"	6	"	"	
·835	·827	"	"	11	"	"	13	"	"	
·838	·830	"	"	13	"	"	15	"	"	
840	·832	"	"	15	"	"	17	"	"	
·843	·835	"	"	9	"	"	10	"	"	
·846	·838	"	"	12	"	"	13	"	"	
·848	·840	"	"	17	"	"	18	"	"	
·851	·843	"	"	39	"	"	40	"	"	
·853	·845	"	"	1	"	"	1	"	"	

Mr. J. U. Lloyd presented a paper on *spirit of nitrous ether* (see page 503); also one on *citrate of iron and ammonium*. To prepare the latter it is proposed to prepare 16 fluidounces of solution of neutral citrate of ammonium from 8 ounces of citric acid and sufficient ammonia water; also a solution of citrate of iron from 4 ounces of citric acid saturated with freshly-precipitated oxide of iron, and to mix this with 5 fluidounces of solution of ammonium citrate, after which it is to be evaporated and scaled in the usual manner.

A paper by the same author on *citrate of iron and quinia* was read, advocating a change in the officinal directions so as to precipitate the quinia at a temperature of 50°F. (see "Amer. Jour. Phar." 1876, p. 107), and for the purpose of rendering the salt soluble but not deliquescent, to add to the ice-cold solution of citrate of iron and quinia, very slowly and with constant stirring, a sufficient amount of ammonia without permanently precipitating the alkaloid.

A change in the formula for *tartrate of iron and potassium* was proposed by the same author, as follows: The hydrated oxide of iron obtained from 9 parts of solution of tersulphate of iron is mixed with 32 parts of water and 4 parts of cream of tartar, heated and stirred until the ferric oxide is dissolved, and filtered from the undissolved cream of tartar. On setting the filtrate aside in a cool place for about a day, a heavy brickdust-colored precipitate will be observed, which is dissolved by the cautious addition of ammonia, after which the solution is evaporated and scaled. The salt contains a small amount of citrate of ammonium, has a slight sweetish taste and is readily soluble in half its weight of cold water.

Mr. Lloyd also read a paper on *hydrated oxide of iron*, advocating the addition of the word "cold" wherever water is mentioned in the formula; he also suggests to increase the cold water for diluting the iron solution from two to four pints, to mix the drained precipitate with 16 pints of cold water, strain again and to repeat this operation. The resulting preparation should be perfectly soluble in citric acid.

A lengthy report on *fluid extracts* was read by Professor Diehl; it is a continuation of the one presented last year, and discusses, among other points, the strength of fluid extracts obtainable by simple and by fractional percolation. The paper is not adapted for making a brief abstract.

On motion of Dr. Ross, amended by Prof. Diehl, it was resolved that the report on the Pharmacopœia, presented at this meeting, be published in cheap pamphlet form, provided the expenses of the same be defrayed by the various Colleges of Pharmacy and Pharmaceutical Associations of the United States.

The Executive Committee gave notice that 24 candidates had applied for membership.

Mr. Wellcome read a paper on the *cinchonas of South America*, and exhibited a large number of specimens of bark collected by him during a recent trip to Peru.

The Association adjourned until 3½ o'clock.

Fifth Session, Thursday Afternoon, September 11th.—After the approval of the minutes, 22 of the candidates, proposed at the fourth session, were balloted for and elected, Messrs. Wells and Good acting as tellers.

A paper by Mr. C. S. Hallberg was read, on the galenical preparations of the Pharmacopœia and a new form of medication termed *saccharated extracts*. This

so-called new form of medication is made by triturating the dry extractive matter of the drug with sufficient milk-sugar to render it the same weight as that of the drug employed, so that the saccharated extract represents the drug weight for weight. The theory, for which no proof was adduced, was advanced that the unavoidable variation in the crude drug is small compared to the variation in the strength of the ordinary extracts.

The various amendments to the constitution and by-laws were then taken up. In Article I, the word "America" was substituted for "the United States." The graded fee for life membership, as proposed last year by the Committee on Ways and Means, was adopted, and immediately afterwards several old members signified their intention of becoming life members at once, and of continuing to pay their annual contributions for two or three years more so as to assist the Association over financial difficulties that might arise from a sudden discontinuance of many annual contributions.

The admission of delegates to membership without ballot was continued, but hereafter they will have to pay the same admission fee as other candidates.

The recommendations of the committee read at the fourth session were adopted, namely, to request the President to appoint a larger number of authorized agents; to reduce the size of the proceedings without impairing their value; to dispose of such publications (journals used in preparing report on the progress of pharmacy), as may be of no further use; to request the treasurer to furnish in his annual report a tabulated statement of receipts and expenditures, and to change the commencement of the fiscal year to January 1st.

On motion of Mr. Ebert, a committee of three on membership was directed to be appointed. The chair appointed Messrs. Sargent, Ebert and Buck, all of whom declined, when Mr. Eberle moved to increase the committee to five, which was carried. Messrs. Bedford, of New York; E. C. Jones, of Philadelphia; Sheppard, of Boston; Cowdrey, of Chicago, and Schæfer, of Iowa were appointed.

On motion of Mr. Markoe, a committee of three, consisting of Messrs. Ross, Rice and Diehl, was appointed for the purpose of receiving subscriptions and publishing the report on the revision of the Pharmacopœia.

Prof. Remington read numerous extracts from his report to the Pharmacopœia Committee on tinctures.

Mr. Vincent Davis, on behalf of the committee, reported in favor of holding the next annual meeting at Saratoga, N. Y., on the second Tuesday of September. The proposition was unanimously adopted. Adjourned to Friday morning at 9 o'clock.

Sixth Session, Friday Morning, September 26th.—After the reading of the minutes, balloting for the three candidates laid over from the previous meeting was ordered, and they were duly elected. Considerable discussion ensued on a proposition for the reconsideration of a ballot, which was declared to be inadmissible except by unanimous consent.

Credentials from the California Pharmaceutical Society and College of Pharmacy were read and accepted.

The Executive Committee announced the names of five candidates for membership.

Mr. T. R. Baker, on behalf of the Nominating Committee, proposed Mr. Chas. F. Fish for Local Secretary for the ensuing year, who was duly elected. An adjournment was then had until 11 o'clock A.M.

Seventh Session, Friday, September 26th.—The minutes of the sixth session were read and approved. The five candidates, previously proposed, were elected.

Prof. Bedford moved the appointment of a committee on railroad transportation, which motion was negatived.

The report of the Committee on Queries was read, accepted and referred. Mr. Kennedy presented a report on the Centennial Fund, according to which there has been collected, during the last two years, only $355.02; the Local Committee having extended the time for another year, the belief was expressed that the remaining $169.98 would then be collected.

The secretary exhibited *salicylate of cinchonidia*, a new medicinal chemical, used to some extent, and prepared by Rosengarten and Sons, by the direct combination of the acid and alkaloid. It crystallizes in well-defined prisms, and is sparingly soluble in water, but dissolves freely in weak and strong alcohol.

Mr. Wellcome gave an account of his personal observations on *Pharmacy in South America*, including the practice of pharmacy by Indiana doctors, and exhibited a number of curious implements which are used by them. Mr. Wellcome's remarks referred chiefly to Peru, and were supplemented by Prof. Markoe with some observations relating to Chili.

Prof. Garrison made a verbal report on the exhibition, and, at his request, three weeks time was granted to the committee for finishing the report.

Prof. Markoe presented a series of resolutions of thanks to the retiring and present officers, the press, the city government, the citizens of Indiannpolis, the Local Secretary, the Indianapolis pharmacists and druggists and their ladies, and to the exhibitors.

After the reading and approval of the minutes, there being no further business, the Association adjourned to meet again at Saratoga Springs, N. Y., on the second Tuesday of September, at 3 o'clock P.M.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Ohio State Pharmaceutical Association.—To the untiring efforts of Mr. Lewis C. Hopp, of Cleveland, ably seconded by Mr. Huston, of Columbus, and others, is due the organization of this the youngest of the State pharmaceutical societies of this country. A number of the druggists of Ohio met at the Board of Trade room in Columbus on the second day of September, and effected a temporary organization by electing Prof. J. F. Judge, of Cincinnati, chairman, and Dr. Thos. J. Casper, of Springfield, secretary. A committee, appointed for the purpose, presented the draft of a constitution and by-laws, based mainly upon those in force for the government of the Pennsylvania Pharmaceutical Association. After the consideration and adoption of the draft presented, a nominating committee was appointed.

At the evening session, the constitution was signed and the initiation fee of $2.00 paid by those present, after which the following officers were elected for the ensuing year: President, J. F. Judge, Cincinnati; Vice Presidents, J. N. McCoy, Kenton; M. S. Mooney, Cardington; Secretary, Lewis C. Hopp, Cleveland; Treasurer, Charles Huston, Columbus. Executive Committee—S. S. West, Cleveland; Thos. J. Casper, Springfield; Charles W. Tobey, Troy.

Delegates were also elected to the meeting of the American Pharmaceutical Association, and committees on trade interests, on papers and queries, and on pharmacy laws were appointed. The Executive Committee was empowered to take the proper steps for the incorporation of the association.

The next meeting will be held at Dayton on the third Wednesday in May next. After passing sundry votes of thanks the Association adjourned, to participate in a banquet tendered to the members at Ruhl, Corbett & Co's by the Columbus druggists.

British Pharmaceutical Conference.—After an interval of six years the British Pharmaceutical Conference has again visited the county of the ridings and for the second time experienced the hospitality of their Yorkshire *confrères*. In point of numbers the meeting has been a most successful one, one hundred and forty-five names having been signed in the visitor's book. The company included many of the best known pharmacists in the three Kingdoms as well as delegates from several kindred associations, amongst them, notably, the Pharmaceutical Societies of Great Britain and Ireland, which were represented by their respective Presidents and several members of their Councils. Nor do we think that the general verdict upon the papers read and the discussions, as compared with those of former years, will be an unfavorable one. Early in the meeting, however, one most unwelcome fact was revealed in the reading of the report, namely, that the Senior General Secretary, Professor Attfield, to whose energy and enthusiasm the present position of the Conference may be in a large measure attributed, had unexpectedly intimated his intention of resigning his present office, although at the request of the committee he had consented to hold it during one more year. The appreciation of his services by the Executive Commiftee was evinced by the prompt formation of a provisional committee, to which many other members present added their names. The Honorary Secretary is Mr. M. Carteighe, and the business of the committee will be to consider the best method of testifying to Professor Attfield the sense of the Conference as to its indebtedness to him.

The Presidential Address was chiefly devoted to carrying out the contrast between the ideal and actual position of the pharmacist in Great Britain which Mr. Schacht had presented to the Conference last year.

Once more Dr. Wright has provided a report on the *aconite alkaloids*, the present one being devoted to the alkaloids from Japanese aconite, atis root and the leaves, flower and stalks of English grown aconite. From Japanese aconite Dr. Wright reports that he has obtained a crystallizable alkaloid, agreeing in composition with the formula $C_{66}H_{88}N_2O_{11}$, which is itself in some respects more stable than aconitin and pseudaconitin, in not yielding "apo" derivatives, and he appears to think it may be a dehydrated derivative of a hypothetical parent base. As an incident of

the research he also reports that "treatment with alcohol alone, unacidulated by any acid at all, extracted practically all the alkaloids present in the roots examined." These results confirm those obtained when Japanese aconite was first examined two years ago[1] in regard to the points of pharmaceutical interest, namely, that Japanese aconite contains more alkaloid—amounting to about 2·5 per cent. soluble in ether—than any other kind of aconite, and that the crystallizable alkaloid obtainable from it is of a specific nature. In the course of the discussion Mr. Greenish suggested the desirability of ascertaining the botanical origin of the Japanese aconite roots worked upon, and expressed the opinion that as met with in commerce this drug is not always of the same character. This point is of special importance, as this kind of aconite, as pointed out by Mr. Umney, is now the kind almost exclusively met with in the market. The examination of atis roots (*Aconitum heterophyllum*) has not led to any definite results sufficient either to confirm or controvert those recorded by Broughton, some years ago, in reference to the substance he termed "atisine." In the examination of the flowers, leaves and stalk of aconite plants no definite result was obtained, and although the quantity of material worked upon amounted to nearly three hundredweight, it was only by inference from the comparative absence of inconvenience experienced in working that the non-existence of poisonous alkaloids was conjectured.

The next report presented to the Conference contained a statement of the results obtained by Mr. Thresh in carrying out the investigation of *commercial ginger*, for which a grant was placed at his disposal last year. These results show that ordinary Jamaica ginger contains, in the portion extracted by ether—(1) a crystalline fat, consisting of a dark red, tasteless and odorless portion, insoluble in strong alcohol, a white amorphous tasteless and odorless portion, soluble in alcohol, and a wax-like tasteless and odorless resin; (2) a red fatty substance, very pungent and soluble in alcohol; (3) a limpid, volatile, straw colored oil of an aromatic, somewhat camphoraceous taste, having a sp. gr. of 0·853 at 15° C; (4) a neutral resin, soluble in strong alcohol; and (5) acid resins of a dark brown color. The pungent or active principle of ginger, to which Mr. Thresh gives the name of "gingerol," is a viscid odorless liquid, about the consistency of treacle, readily soluble in alcohol even when dilute. That portion of ginger which is insoluble in ether consists chiefly of mucilage, inorganic constituents, a substance precipitated by tannin, metarabin, cellulose, albumenoids, etc. The comparative examination of different kinds of ginger showed that the variety most esteemed contains only half as much essential oil as the others, also less active principle than African or common Jamaica. The volatile oil of fine Jamacia ginger has, however, the finest bouquet.

The first paper read after the presentation of these reports was on the "Soluble Essence of Ginger," and it described a modification of the method originally proposed by Mr. Thresh for its preparation. The *rationale* of this process was to be gathered from a consideration of the constituents of ginger root; in carrying it out, the alcoholic tincture which contains, together with the extractive soluble in water, neutral and other resins, gingerol, small quantities of the red fat, wax, etc., is mixed with slaked lime, by which the greater part of the resin is precipitated. On

[1] "Pharm. Journ." [3], vol. viii., p. 172, and "Year-Book" (1877), p. 469.

adding dilute sulphuric acid to the clear liquid the dissolved lime is precipitated, and by diluting the resulting clear liquid, and filtering through powdered pumice or silica, the wax, fat, extractive, and the rest of the resin is got rid of, together with any excess of volatile oil.

The next paper gave an account of an investigation conducted by Mr. Stoddart, to ascertain the cause of a periodical fatality amongst sheep in the neighborhood of Bristol. Though the inquiry was not originally of any apparent pharmaceutical interest, it incidentally furnished results of value in regard to the period at which ergot should be gathered for medicinal purposes. It was observed that the sheep fed on natural herbage always had foot-rot, even in summer, and other circumstances led Mr. Stoddart to suspect that the mischievous effects might be due to ergotism. On examining the old mature plants of *Lolium perenne* he noticed well-formed purplish dark colored ergots, but could not discover these upon the younger plants, which were greedily devoured by the lambs, while they sought to avoid the old plants. In the following spring Mr. Stoddart obtained specimens of *Lolium perenne*, the inflorescence of which was just commencing, and he traced the development of the ergot from this stage of its growth until the commencement of August, at which period he found the fungus had reached the limit of its vegetative or myceloid growth. It is at this stage that the peculiar medical effect of the *Claviceps* on the animal economy exists in greatest intensity, and it was at this period that the effect produced upon the sheep was greatest. After carrying out these observations for six or seven years he came to the conclusion that for all medicinal purposes ergot should be gathered in the months of August or September, because at the end of the vegetative period its action is greatest.

Dr. Symes then read a paper describing the construction and principles of the different forms of *polarimeter* and its application in pharmacy. Among other illustrations of this he gave the results of the determination of the rotatory power of a number of essential oils. Another illustration of the utility of the polarimeter had reference to the examination of urine, a legitimate branch of the pharmacist's calling, not subject to the influence of unfair competition on the part of uneducated outside traders.

Next in order were three papers by Mr. Siebold. The first described the application of *chloroform in the testing of drugs*, and was based upon the principle indicated by Dr. Himley, that the presence of mineral adulterants in flour can be detected by their sinking in that liquid, while the normal constituents of the flour float at the surface. Mr. Siebold described the results obtained in this way as being more satisfactory than those obtained by incineration. The second paper suggested that the difference in the coloration of chloroform by iodine according to the presence or absence of alcohol afforded a means of detecting the presence of *alcohol in chloroform*. With a mixture of chloroform and alcohol the brown color of the alcoholic solution of iodine predominates over the purple color of the chloroform solution sufficiently to give indications to satisfy the requirements of the pharmacist, as in this way the presence of half per cent. of alcohol can be detected. The third paper was on the *use of the hydrometer* in determining the specific gravity of liquids, and described a number of experiments undertaken with the object of deciding whether the indications of the hydrometer can be depended upon with liquids con-

taining undissolved powders, oils, resins, etc., uniformly suspended. The results tended to show that the presence of such substances does not affect the indications of carefully made hydrometers.

The last paper read at Tuesday's sitting of the Conference was by Mr. Gerrard, on the extraction of *pilocarpine* by ammoniated alcohol, which he has found to be a much more convenient solvent than those hitherto used, it furnishing a larger amount of product and effecting the separation of the alkaloid from the dark coloring matter much more readily. It was pointed out by Mr. Williams, in the course of the discussion on this paper, that the use of ammoniated alcohol may possibly be adopted with advantage in the extraction of alkaloids from other materials.

On the second day's sitting the business was commenced by the reading, by Mr. Allen, of some "Notes on Petroleum Spirit," describing some characteristic reactions of petroleum spirit as compared with those of benzene from coal tar, as well as a method of testing mixtures of petroleum spirit and benzol. The different behaviour of these substances when treated with nitric acid furnished the basis for this method of testing.

Mr. F. W. Fletcher then read a paper on the "Valuation of Citrate of Iron and Quinia." After adverting to the circumstance that the Pharmacopœia test furnished no indication whether the alkaloid obtained by its directions was or was not quinia, the author suggested the application of the plan of fractional crystallization to the sulphate as a means of detecting the presence of cinchonidia. The necessity of employing this test was shown by the mention of the circumstance that certain foreign makes of "sulphate of quinia" invariably contain a large proportion of cinchonidia sulphate.

Two papers by Mr. E. Davies were then read. The first, on the "Estimation of Water in Iodine," by combining a known quantity of iodine with a weighed excess of mercury, and weighing the dried residue, elicited some useful information. The other paper, on the "Presence of Tannin in Gentian Root," suggested the possibility that the tannin contained in the root is liable to decomposition when the gentian is powdered, or that tannin is not a uniform constituent of gentian root.

A paper on "Amylic Alcohol and Amylic Nitrite," by Mr. Dott, consisted mainly of a reply to certain criticisms[1] of the paper read by Mr. Dott upon this subject at the meeting of the Conference last year.[2] The author maintained the correctness of the statements in his original paper, and he was supported in that position by speakers who stated their experience in the course of the discussion.

The "Gelatinization of Tincture of Kino" formed the subject of a paper by Mr. Bamford. The author suggested frequent agitations of the tincture as an efficient remedy of the inconvenience experienced by many dispensers from the behavior of tincture of kino. In the course of the discussion that followed the reading of this paper it soon became evident that gelatinization of tincture of kino is not by any means invariably experienced. Some of the speakers had never seen a case during many years; others had observed it only on one or two occasions, and it was suggested that the result was probably due to some peculiarity in the kino

[1] "American Journal of Pharmacy," for February, and "Pharm. Jour.," vol. ix, p. 899.
[2] "Pharm. Jour.," [3] vol. ix, p. 172. "Amer. Jour. Phar.," 1878, p. 499.

used rather than a constant characteristic of this drug. Amongst other preventives of gelatinization the effect of the addition of glycerin, as suggested by Mr. Ellinor, was in the main spoken of favorably, but it was also remarked that the glycerin might to some extent counteract the astringent action of the kino. The judicious selection of the proper kind of kino for the preparation of tincture of kino will probably be the most effective remedy for this kind of difficulty and its attainment may therefore be intrusted to the relative intelligence of wholesale houses.

The use of "Anhydrous Air as a Therapeutic Agent" was described in a paper by Mr. Keyworth, who had found that its application as an absorbent of moisture gave relief from the pain and inconvenience caused by tension in various morbid conditions, such as cancerous growths, ulcers, etc. A jet of dried air applied for an hour in the evening was said to have been found to cause cessation of pain for several hours and secure a night's rest.

Mr. H. Collier read a paper on the use of "Tincture of Quillaia bark as an emulsifying agent," in which he described the efficacy of this preparation in producing emulsions with materials of a resinous or oily nature, and suggested that on this account it was deserving of consideration as a pharmaceutical agent. Some strong doubts were expressed in the discussion of this paper that the peculiar activity of quillaia bark would render it inappropriate for use as the means of effecting emulsification, but the remarkable efficacy of the tincture in causing the rapid subdivision of mercury was considered to promise well for its application in the preparation of sheep ointment.

Another paper by Mr. Collier dealt with the chemical condition in which saponin exists in the quillaia bark.

Next in order was a note on Aricin, by John Eliot Howard. Referring to the recent paper on this subject by Dr. Hesse, and to the specimen of aricin presented by that chemist to the museum of the Society, the author stated that he had compared this sample with the one deposited in the museum by himself in 1852 and was satisfied as to their identity. He also found the bark from which Dr. Hesse obtained his alkaloid to be exactly like his own, namely, the *jaune de Cuzco* of Delondre and Bouchardat, which was imported as Calisaya in 1829. This, Mr Howard believes, is the only bark from which aricin has been obtained, and he points out that the suggestion of the existence of aricin among the alkaloids of *Cinchona succirubra* is merely matter of conjecture. Mr. Howard disavows any claim to the discovery of aricin, though he has satisfied himself of the substantial accuracy of Pelletier's observations, and has, therefore, maintained the existence of the alkaloid described by him as aricin, although it has generally been denied. It is suggested that the further examination of bark yielding aricin promises to be of interest as regards the classification of different species of the genus *Cinchona*, and that in connection with this inquiry it will also be desirable to study the physiological action of aricin, as well as that of paricin, which appears to occur among the alkaloids of *Cinchona succirubra*.

A paper on the "Chemistry of Chaulmoogra Oil," by Mr. Moss, showed that the existence of any alkaloidal substance in this oil was doubtful, at least so far as to accouut for any medicinal efficacy. Chemically, the specific characteristic of chaulmoogra oil consists, according to the author's results, in its containing a peculiar

fatty acid, gynocardic acid, associated with palmitic acid, hypogœic acid and cocinic acid.

Dr. Hamberg's paper on the "Capacity of Different Organs to absorb and retain Arsenic in Cases of Chronic Poisoning," described the chemical results obtained in a physiological investigation carried out for the purpose of elucidating this subject.

The last paper read was on the "Estimation of Morphia in Turkey Opium," by Professor Flückiger. The author recommended the exhaustion of the opium with cold water as being the most convenient for extracting the morphia. The clear liquid is then mixed with definite proportions of alcohol, ether and ammonia, and after shaking crystals of morphia are formed at the surface of the layer of ether. After a day or two, the whole of it is deposited and can be collected and weighed.

At the conclusion of the reading of papers, a ballot was taken for the election of officers of the Conference for the ensuing year, which resulted in the choice of Mr. William Southall, of Birmingham, as President. The place of the next meeting, decided in accordance with the previous custom of accompanying the meeting of the British Association, is Swansea, and Mr. J. Hughes, of that town, has been elected Local Secretary; the Vice-Presidents being Mr. Grose of Swansea, Mr. Reynolds of Leeds, Mr. Ward of Sheffield, and Mr. Sandford of London.

The usual votes of thanks for the services rendered by the members of the Local Committee were then proposed, special mention being made of the names of Mr. Ward, President of the Sheffield Chemical and Pharmaceutical Association, Mr. Maleham, the Local Secretary of the Conference, and Mr. Learoyd, who has actively assisted him. These complimentary acknowledgments of the service rendered to the Conference were never more thoroughly well merited, and we think that all who were present at this meeting will share the opinion expressed by a Yorkshire man, that Yorkshire has reason to be proud of the way that Sheffield has received the Conference and maintained the credit of the county.

On the following day the prospects of fine weather at an early hour were very slender, but at the time fixed for meeting at the Freemason's Hall it had so far improved that there was a large muster of members, a few of whom were accompanied by ladies, and the excursion was carried out in accordance with the programme indicated last week. With the exception of one brisk shower, a kicking mare and some mountain dew there was nothing to mar the enjoyment of the entertainment that had been provided by the zealous exertions of the Local Committee. Before eleven o'clock at night the whole party had returned safely to Sheffield without any mishap and highly delighted with the excursion.

Besides providing for the convenient lodging accommodation of visitors and for their amusement the efforts of the Local Committee were extended to obtaining for them access to some of the interesting manufactories existing in Sheffield. First amongst these must be mentioned the works where the manufacture of steel according to the Bessemer method is carried on in the manner described in this Journal when the process was only in its infancy. It was naturally at Sheffield that the inauguration of this method took place, and those who had an opportunity of witnessing the enormous extent to which it has developed during the last thirty years have great reason to be grateful to the Local Committee for having procured for them an opportunity of witnessing the operations of this interesting branch of

manufacture. In addition to the treat thus afforded, the members were also enabled to visit the electro-plating works of Messrs. Walker & Hall and the show-rooms of Messrs. Rodgers, and so to obtain an actual knowledge of the way in which two of the chief manufacturing trades in Sheffield are carried out. For these facilities the members are under great obligation to the Local Committee, and they are no less indebted to the proprietors of these works visited, as well as to the various officials connected with them, for the extreme liberality with which everything was shown, and for the courtesy and attention displayed, no doubt at the cost of some considerable personal inconventence.

In this superficial sketch of the Pharmaceutical Conference at Sheffield it has only been possible io indicate some or its most salient features, and there are many things we should have been glad to speak of had time and space permitted. But we may, from a general point of view, say that this has been, in every respect, one of the most successful and satisfactory meetings that have yet been held.—*Phar. Jour. and Trans.*, Aug. 23, 1879.

German Apothecaries' Society.—The annual meeting was held September 4th and 5th in the city of Hannover, Director Wolfrum in the chair. After brief addresses of welcome on behalf of the city government and the local committee, the annual reports of the various officers were received. The Society has 2,807 members, 140 having joined since the beginning of the year, and 94 resigned during the same time. Besides the general treasury, there are funds for aiding deserving assistants, members or their families and students, as well as for scientific investigations; the total invested capital being 261,295 marks (about $65,000). The total expenses of administration during the year 1878 were 3,803 marks, while in the same period 11,375 m. were paid to widows and orphans, 8,684 m. to assistants, and stipends of 150 m. each to 31 students.

A lengthy report on the revision of the Pharmacopœia was made, and among the points subsequently acted on were the following: That the Pharmacopœia should be issued in the Latin language only; that chemical formulas be not introduced; that in the designation of compounds of metals precedence be given to the name of the metal; that only such Latin synonyms be added which appear to be indispensable; that the medicinal chemicals be succinctly described with reactions of identity and tests of strength; that tinctures be prepared by maceration and expression without adding any menstruum subsequently for the purpose of obtaining a definite weight, and that in all cases clear tinctures only should be dispensed; that the powdering of drugs be done by the pharmacist, and that the table of maximum doses should not be enlarged so as to include also maximum doses for children, or for clysters or subcutaneous injections.

The last day was principally occupied with the discussion on changes in the by-laws.

Prof. Kraut delivered a lecture on the correct and judicious use of chemical formulas, and Prof. Husemann one on the problems of modern toxicology.

Director Wolfrum declining a re-election, Mr. Bernbeck was elected in his place. The next meeting will be held in the city of Breslau.

The meeting was attended by 355 members, who were accompanied by 72 ladies. A delegation of British apothecaries was also present.

Swiss Apothecaries' Society.—The thirty-fifth annual meeting was held in Geneva, August 21st and 22d, President Schaer presiding. Besides the reports of the officers, reports on various subjects of local interest were received and discussed. A committee of seven was appointed for the purpose of drafting a pharmacy law for Switzerland. Lectures were delivered by Prof. Brun on the use of the microscope in pharmacy, by Prof. Schaer on the dissociation of chlorine according to the discoveries of Prof. Victor Meyer, and by Mr. Studer on the analysis of wine.

The following officers were elected for the ensuing year: President, Prof. Schaer, of Zurich; Vice-President, Prof. Brun, of Geneva; Secretary, H. B. Studer, Jr., of Berne. Mr. Klunge, Jr., of Aubonne, was elected editor of the weekly pharmaceutical journal in place of Mr. Stein, resigned. The next annual meeting will be held in Luzerne.

EDITORIAL DEPARTMENT.

The Twenty-seventh Annual Meeting of the American Pharmaceutical Association was a decided success as far as attendance was concerned. The papers were not as numerous as on former occasions, but nearly all of those read are of more than ephemeral value, and merit the careful attention of pharmacists generally. It was to be regretted that the discussions on these essays were so limited, and that so little exchange of opinion could be had on many of the points reported on. Matters relating to the government of the Association and its financial affairs consumed much of the available time. We are pleased with the action taken in regard to the finances, and believe that with proper economy the Association will gradually be placed on a sound financial basis, without resorting to the necessity of a per capita tax for meeting current liabilities.

The energy of the Local Secretary and of the Local Committees deserves all praise. Much of the comfort of the visitors, their enjoyment and of the success generally of the meeting and the exhibition, is due to them. For want of space we shall defer giving a fuller account to our next issue.

The Revision of the Pharmacopœia and Pharmaceutical Societies.—The Colleges of Pharmacy begin their lectures about October 1st, and there seems to be a fair prospect for full classes and plenty of work for the professors. With most colleges the pharmaceutical, or as they are in some places called the conversational, meetings begin in the month of October, and since the decennial revision of the national Pharmacopœia is near at hand it is but reasonable to expect of these institutions of pharmaceutical learning that there should be no lack of subjects for investigation and discussion at their meetings. We have heretofore repeatedly urged, more particularly upon the Colleges of Pharmacy the importance of subjecting the pharmacopœia to a thorough preliminary revision; but we have good reason to believe that the subject has received less attention than its importance seems to

demand. The few months that are left before the Pharmacopœia Convention will convene will rapidly pass, and in the mean time the opportunities will not be over abundant for the critical examination of different views on disputed points, even if such examination should be merely based on the necessarily incomplete elaboration presented at the last meeting of the American Pharmaceutical Association, and which was, in our opinion not very advisedly, ordered to be published. To make the Pharmacopœia truly national, the well directed labor of all Pharmaceutical Associations, and more particularly of the colleges, is required; we are sorry to acknowledge that from present appearances the *investigations* will probably be limited to those made by a few individuals, though we expect the criticisms to be numerous. To guard against such a contingency, it seems to us that every College of Pharmacy and Pharmaceutical Association should subject such portions of the pharmacopœia to a thorough and careful revision, based upon actual experiment, as can be accomplished in the remaining few months, rather than letting it go by default or basing propositions only or mainly on the opinion of others. The most important work which, in our opinion, has been accomplished by the committee of the American Pharmaceutical Association is not to be measured by the nature or number of the formulas, etc., presented at the last meeting, nearly all of which express only the views of one or a few of its members; but in agreeing upon general principles upon which the work of preliminary revision should be done. This result was arrived at through the judicious, unceasing labor of its chairman, Mr. Charles Rice, a result which deserves the most unreserved commendation. That all these efforts did not serve as a sufficient stimulus for all the pharmaceutical societies of the country to undertake the revision from their own standpoint is not the fault of Mr. Rice or of the committee. In view of the short time left now, we would advise all Pharmaceutical Colleges and societies to proceed without delay with the preliminary revision of such portions that can be worked out from the united observations of their own members. It is, by far, better to aim at little and accomplish this well, than to attempt much with nothing to rely on, except the experience or the views of others.

Correction.—In the editorial note, fourth line from below, on page 388, the figures 28 should be 12, so as to make the *total* amount of alcohol used 28 fluidounces.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Proceedings of the Pennsylvania Pharmaceutical Association at its Meetings held in Harrisburg, February 26th, 1878; Reading, June 11th, 1878; Pittsburgh, June 10th, 1879. Harrisburg: Lane S. Hart, Printer and Binder. 8vo, pp. 64.

Reports on the three meetings held by the Pennsylvania Pharmaceutical Association were published heretofore in this journal. The pamphlet before us contains the official minutes of these meetings, together with the four papers read; also the charter, constitution and by-laws, and lists of the present officers, committees and members. The association has at present, besides 4 honorary, 137 active members, residing in 26 counties.

The pamphlet, which is accompanied by a list of 23 queries suggested to the members for investigation and report in June next, has been gotten up with commendable neatness and accuracy, and reflects credit upon the Executive Committee and the Secretary, to whom the publication has been entrusted.

We understand that the Treasurer is now ready to furnish those members who may desire it a certificate of membership, which has been prepared in an artistic style by Lehman & Bolton, of Philadelphia. The price has been fixed at $3.

Guide to the Examination of Urine, with Special Reference to the Diseases of the Urinary Apparatus. By K. B. Hoffmann, Professor at the University of Graz, and R. Ultzmann, Docent at the University of Vienna. From the second edition translated and edited by F. Forchheimer, M.D., Professor of Medical Chemistry at the Medical College of Ohio. Cincinnati: P. G. Thomson, 1879. 12mo, pp. 195. Cloth, $1.50; leather, $2.

The book opens with chapters treating of the histology of the urinary apparatus, and the excretion of urine. The principal chapter, on the urine, occupies 105 pages, and treats of the subject as to its physical properties, its chemical composition, the urinary sediments and concretions. The composition is considered under the subheadings of normal organic constituents, normal inorganic constituents, and abnormal constituents. The sediments are divided into non-organized (on p. 88 it is incorrectly printed non-organic) and organized sediments, the latter comprising mucus, epithelium, pus, blood corpuscles, etc. The chapter closes with a description of concretions and the analysis of calculi.

While in Chapter III the chemical behavior of the individual substances is described, the following three chapters are devoted to the analysis, giving first the reagents and apparatus, then the quantitative determination of the most important constituents, and finally the qualitative (approximate) analysis of urine. The remaining chapters, covering about 50 pages, are devoted to diagnosis of diseases of the urinary apparatus.

The book is evidently intended for the use of beginners, but those having some experience in urinalysis may also consult it with advantage, since the processes have been carefully selected and are in all cases clearly though briefly described, attention being at the same time directed to the sources of possible errors. We have found but few typographical errors, and these are easily corrected. A number of illustrations have been added which, though they cannot be considered artistically executed, are serviceable and instructive. If in a second edition some typographical changes were made in the various headings and subheadings, we think the usefulness of the book for practical purposes would be materially enhanced. The addition of a full table of contents would likewise seem to be desirable.

Student's Pocket Medical Lexicon, giving the Correct Pronunciation and Definition of all Words and Terms in General Use in Medicine and the Collateral Sciences. With an Appendix. By Elias Longley. Philadelphia: Lindsay & Blakiston, 1879 24mo, pp 303. Cloth, $1; Turk., $1.25.

This little book will be welcomed by students in medicine and pharmacy as a convenient pocket companion, giving the pronunciation, accentuation and definition of medical, pharmaceutical, chemical and botanical terms. It cannot be expected to be as comprehensive as Dunglison's or Thomas' dictionary, nor, like these, to enter into the etymological derivation of the various words and terms; its chief

aim, as indicated on the title-page, is to give the pronunciation and definition of the medical terms *in general use*. This intention appears to be well carried out as far as medicine and surgery are concerned; but the collateral sciences have not received the same attention. We are well aware that in a work of this kind it is exceedingly difficult, if not impossible, to draw an unerring line as to what should be admitted and discarded; but when words like elutriation, decantation, etc., are admitted we should expect a like liberality accorded to percolation, evaporation, distillation, etc.; and if cormus is (not quite accurately) defined, we would look also for bulbus, radix, rhizoma, etc. Still in such matters the author is entitled to his own judgment as to what should be admitted of those words which are in general use in the collateral sciences.

The pronunciation is given in phonetic letters, the English mode of pronunciation having been adopted; but a few simple rules are given in the preface for ascertaining the so-called continental pronunciation, which in our opinion is gradually gaining ground in this country. In the accentuation of several botanical terms we have noticed that the author differs from Gray and some other American authorities, and in most cases noticed by us we believe that there are good reasons for holding different views from those usually entertained.

The definitions are, in nearly all cases, correct and sufficient, though necessarily very brief. In certain cases, however, they may very properly be objected to. An organic base is defined as an organic body capable of uniting with acids and forming neutral compounds, resembling salts; admitting this as correct, though not completely covering the subject, santonin cannot certainly be called a very weak "organic base." Oleander is stated to be *Rhododendron chrysanthum*, an error which seems to have been copied from Dunglison.

The typographical errors, as far as noted, are readily corrected.

The appendix contains tables on poisons and their antidotes, abbreviations used in prescriptions, the metric system of weights and a metric scale of doses.

We regard this work as a useful and convenient one, more particularly for medical and pharmaceutical students; it will not supersede similar larger works, but it is admirably suited for hasty and frequent reference.

Eyesight and How to Care For It. By George C. Harlan, M.D, surgeon to the Wills' Eye Hospital. Philadelphia: Lindsay & Blackiston. 1879. 16mo, pp. 139. Cloth, $0.50.

This is one of the American Health Primers. After a brief introduction, the author treats of the anatomy of the eye, the physiology of vision, the ophthalmoscope, injuries and diseases of the eye, optical defects, spectacles, practical suggestions for the care of the eyes, and effects of school life upon the sight. It will be observed that the subject is thoroughly discussed in its various bearings, and we think that no intelligent reader will fail to find useful hints regarding the care to be bestowed upon his eyes.

The following pamphlets have been received;

A general System of Measurement for Urethral, Uterine, Rectal and other Instruments; and an Adaptable Metric Gauge. By Charles H. Thomas, M.D.

Precautions Requisite in the Administration of Ergot. By J. W. Compton, M.D.

Report on Medical Education to the Illinois State Medical Society. By E. Ingals, M.D.

Notes on the Estimation of Urea and on the Revision of the United States Pharmacopœia in 1880. By Edward R. Squibb, M.D.

Dermatitis Venenata or Rhus Toxicodendron and its Action. By Roswell Park, A.M., M.D.

Vegetarianism, the Radical Cure for Intemperance. By Harriet P. Fowler. New York: M. L. Holbrook & Co. 1879.